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At the end of this Volume will be found a
List of Books and Forms required under the
Public Health Act and subsequent Statutes,
and also a List of Recent Works bearing upon
Local Government.

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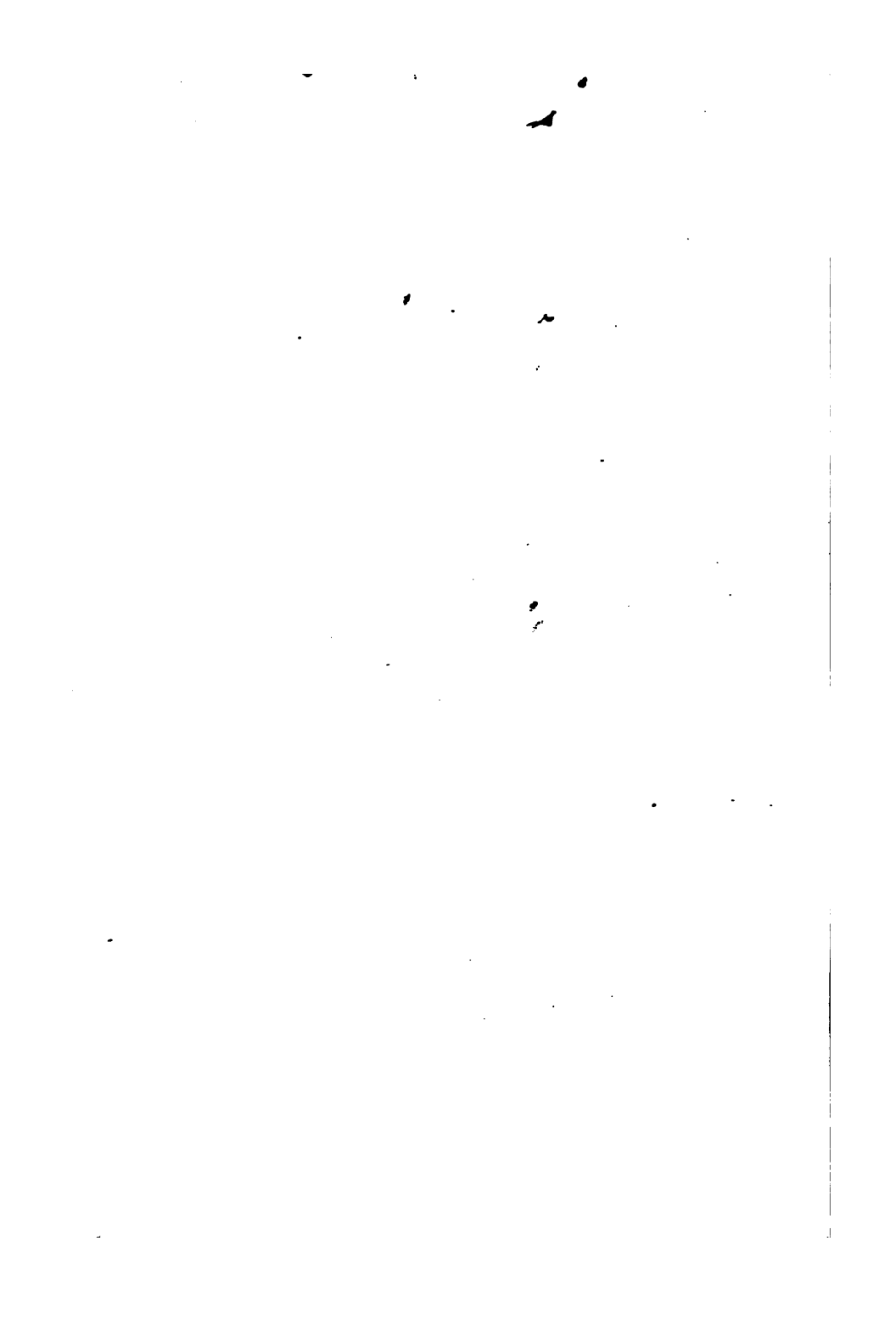
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**A
PRACTICAL GUIDE
FOR
INSPECTORS OF NUISANCES.**



A

PRACTICAL GUIDE

FOR

INSPECTORS OF NUISANCES.

BY

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INTRODUCTION.

THE aim of the following pages has been to put forward suggestions, as well as to supply notes of information, for the practical guidance of an inspector of nuisances in his endeavours to surmount and disentangle the various difficulties attending the discharge of his duties,

It is taken for granted they will only be consulted by those who are newly appointed to the office of inspector, and are desirous of availing themselves of the experience of others. It is probable that inspectors who have enjoyed their posts for several years could add many important facts to those set down. Their kind forbearance is craved.

Every year brings its own discoveries in sanitary science, leaving the best informed in arrears of knowledge, unless they make constant additions to their store. The celebrated Nicholas Culpepper was one of the first to familiarise sanitary matters. His particular doctrine was the use of English herbs in preference to foreign drugs. It was not likely, he used to argue, that Providence would so order things that a disease should be in one part of the world, and the cure for it in another. Accordingly, he urged, the London gardens of his day could grow everything that an Englishman could require as "Salves for every Sore." His successors introduced other panaceas. A celebrated French physician advocated air, diet and exercise as the sole sources of health. Dr. Hunter's

receipt for rearing healthy children was "plenty of milk, plenty of sleep, and plenty of flannel." The Duke of Wellington's first provision for the health of a soldier is said to have been a pair of good shoes, the second, a spare pair of good shoes, the third, a spare pair of soles. Dr. Kitchener's prescription was, "Denticate, masticate, chump, and chew." But we now know that none of these things would avail to those doomed to live in an unsanitary home.

Few circumstances are too trivial to be of no consequence. The mere colour of our clothing is not without influence. A wall-paper may be harmful. The foundations of our houses and the soil on which they stand should be matters of grave consideration. The soil affects the food, food affects our strength, health, and even height and bulk. A soil retaining moisture, in seasons of excessive rainfalls, has been found so coincident with diptheria as to give rise to a conviction that there is the close association of cause and effect between the two. A diet in which the potato largely figures is found to be productive of a condition of body conducive to consumption, scrofula, rickets, ophthalmia, and rheumatism. But some sanitary circumstances are of much more consequence than others, and those coming under the care of an inspector of nuisances are the most important of all.

The early pioneers of the sanitary movement may look around them with satisfaction. Our sanitary legislators, too, may congratulate themselves on work achieved, notwithstanding what remains to be done. Already their labours are bearing good fruit. Speaking only of local experience, epidemics that were of frequent occurrence are now extremely rare. In the rural dis-

trict with which the writer is associated, presided over by the Rev. M. Creighton, M.A., there has been no death from what is classed as a preventible disease for many months, except in a village where negotiations for sanitary works have been drawn out over four years without any improvements having been made.* All the villages that have taken unto themselves water supplies and sewage systems under the Act have reaped benefit from the expenditure in improved health.

We have but to maintain continuity in sanitary efforts. The old saying that cleanliness is next to godliness may be well borne in mind ; for the maintenance of cleanliness is the root of all sanitary action ;—clean air free from empoisonments, clean water free from sewage gas or other filth, clean diet free from parasites and decay, clean premises free from all unhealthy accumulations being about the beginning and the end of it. Over all these things the Inspector of Nuisances is appointed guard. That he may be worthy of the vocation, and that this little work may be of use to him in his endeavour to be so, is the sincere desire of the Author.

Lucan tells us the gods conceal the happiness of death ; nevertheless, let the inspector aim at discovering and assisting the means of prolonging the splendour of life.

To take a motto from the poet-laureate :—

'Tis life whereof our nerves are scant,
Oh, life, not death, for which we pant,
More life and fuller that we want.

* Dr. Geo. F. Easton, the medical officer, states in his last annual report there is a substantial diminution in the number of deaths, and a general absence of *any* severe disease of an infectious character. The death rate per 1000 of the population is reduced from 17·70 to 15·66.

CHAPTER I.

ON THE ORIGIN AND INSTITUTION OF THE OFFICE
OF INSPECTOR OF NUISANCES.

THE inspection of nuisances is no new sanitary regulation. It may, indeed, be classed among the ancient institutions of the country ; for we have but to turn over the pages of our earliest English statutes to find that various enactments called for the performance of a duty of the kind several centuries ago. For instance, an Act passed in the reign of Edward II. set forth that any butcher who sold swine's flesh measled, or that had died of the murrain, should be fined for the first offence, pilloried for the second, imprisoned and fined for the third, and expelled the town for the fourth. All that the legislature has done in this matter in the course of the last few years is to classify nuisances, and enforce and secure the due and, perhaps, more methodical execution of duties connected with their detection, or removal, as the case may be. Whereas the officers of corporations and other town authorities, and the village constable in rural districts, were formerly the individuals upon whom rested the responsibility of the recognition of nuisances injurious to the public health, every mile of the whole country is now placed under due sanitary surveillance.

The old definition of nuisance, or *nusance*, as it was sometimes written in old times, was—"Annoyance, as when a man raises a wall, stops water, or does any unlawful act upon his own ground or elsewhere to the damage of his neighbour." Thus, a statute passed in the 12th year of the reign of Richard II. runs :—"None

shall cause to be cast any garbage, dung, entrails, or any other annoyance into the ditches, rivers, waters, or other places within or near any city, borough, or towns, or the suburbs thereof, in pain to be called by writ before the chancellor, and if found guilty to be punished at his discretion." In those old Plantagenet days nuisances were also deemed oppressions. Thus, various ancient statutes dealt with oppressions by nuisance, for which the parties aggrieved had their remedy in "Assize of Nuisance," brought in the Common Pleas in some cases; in others, by "writs of nuisance," called Vicontiels, which were tried in the county before the sheriff; in others, by the writ of "Quod permittal." If a person built a house, wall, shed, lean-to, chimney, or gutter, on his own ground, which injured his neighbour's property, either by damp or rot, or stoppage of light, or way thereto; or raised or pulled down a dam, pool, or pond, or ditch to his neighbour's hurt; or turned or stopped an ancient watercourse in such manner as to injure a neighbour's property; or conveyed water away by pipe from water brought by pipe by his neighbour; or erected a lime-kiln close to his neighbour's house; or defiled any fishing water by pouring into it from a dye-house dung or slime or filth; or placed any corrupt or stinking thing against the house of another, the stench from which was offensive to the inhabitants of it, he was guilty of Oppression.

As years passed by, frequent efforts were made in each successive century to improve the health of the population by suppressing unsanitary conditions by legal enforcements. The question of over-crowding was dealt with as early as the reign of Queen Elizabeth. "No owner or occupier of any cottage shall place or willingly suffer any more families than one to co-habit therein, in pain to forfeit to the Lord of the Leet 10s. for every month he so continues them

together," runs an Elizabethan statute. Many laws relating to adulterations in food and sale of bad food, such as "starved eels," or "corrupt butter;" to burials; to the proper keeping of highways and paving of streets; to the redemption of marshes and fens and kindred subjects bearing on the general health, were in force in King Charles's time. The plague, especially, brought the duties of inspection prominently forward. The watchmen of that day were empowered to prevent any infected person residing in an infected house from coming out of it; and searchers, examiners, keepers and "burriers" were appointed to meet the exigencies of the crisis. Subsequently, additional laws were made to control adulterations in food; there were special Acts for the improvement of certain towns; new rules for the regulation of bakehouses, and for due search in shops, cellars, warehouses, and other places, for wares ungarded (such as spices and drugs); and a constant tendency to protect the public health.

When Her Majesty ascended the throne, the subject was prominently before the legislative world. There was an Act passed for the improvement of towns in 1847, which included the appointment of an inspector of nuisances. There was an Act for the regulation of markets and fairs passed in the same year that provided for the appointment of an inspector of provisions. And in 1848 the first Public Health Act was passed. This, also, required, among other officers, the appointment of an inspector of nuisances. The Common Lodging-houses Act was passed in 1851; the Diseases Prevention Act, in 1855; the Removal of Nuisances Act, also in 1855; the Metropolitan Local Management Act, in 1855; the Local Government Act, in 1858; a Bakehouse Regulation Act, in 1863; the Sanitary Act, in 1866; a Workshop Regulation Act, in 1867; the Artisans' and Labourers'

Dwellings Act, in 1868 ; an Act to amend the Law for the Prevention of Adulteration of Food and Drink and of Drugs, in 1872 ; besides various amendments of former Acts. In 1872, the Public Health Act was passed that required the appointment of rural inspectors. Eventually, the statutes relating to the public health became so numerous that it was deemed desirable to frame a special Act for consolidating and amending them. This is entitled the Public Health Act, 1875. It received the royal assent August 11th, 1875. Upwards of twenty Acts were repealed on this occasion, except, in some instances, so far as they relate to the metropolis ; save a limited number of sections which remain in force as if enacted in the body of the New Act.

For all practical purposes the inspector of nuisances, or sanitary inspector, need go no further back for his authority than this Public Health Act, 1875. In this comprehensive statute (as in the Public Health Act of 1872) it is laid down that England and Wales should be divided into sanitary districts, to be called, respectively, urban sanitary districts and rural sanitary districts. The urban districts are those already constituted : either boroughs under an authority composed of mayor, aldermen and burgesses, acting by the Council ; or districts under Improvement Commissioners ; or districts under a Local Board. The rural sanitary districts are the areas of any unions not included in urban districts, and each of them is placed under the authority of the guardians of the unions to which it belongs. The metropolis is specially excluded from this apportionment. Both urban and rural sanitary authorities are invested with powers to make bye-laws.

Besides the metropolis, there are seven exceptions to this division. The boroughs of Oxford, Cambridge, Blandford, Calne, Wenlock, Folkestone, and Newport,

Isle of Wight, are not to be deemed boroughs. Oxford is included in the Local Government district of Oxford. Cambridge is an Improvement Act district. And so much of the borough of Folkestone as is not included in the Local Government district of Sandgate is deemed an urban district under the jurisdiction of the authority for executing "The Folkestone Improvement Act, 1855."

In case any other borough should be included in either a Local Government district or an Improvement Act district, or either of these districts should be included in the other, it is to be considered absorbed in the larger of the districts of which it forms part, and the Local Government Board or Improvement Commissioners, accordingly, are the urban authority. But when an Improvement Act district is coincident in area with a Local Government district, the first-named is the urban authority. If only a part of an Improvement Act district is situated within a borough, or Local Government district, or if only a part of a Local Government district is situated within a borough, the remaining parts of either district are to be still subject to the same jurisdiction to which it was subject before the Act was passed, unless the Local Government Board directs otherwise by a provisional order.

For each district thus divided and apportioned the Act requires the appointment of a staff of officers for the proper transaction of the mass of business with which every urban and rural authority has to deal. For every urban authority this staff is to consist of a legally qualified medical practitioner as medical officer of health, a surveyor, an inspector of nuisances, a clerk, and a treasurer, with such assistant collectors and other officers and servants as may be found necessary.

The rural authorities have different powers in this

matter. Each is empowered to appoint one *or more* legally qualified medical officers of health, and one *or more* inspectors of nuisances, besides such assistants and other officers and servants as may be necessary and proper. This power to appoint more than one medical officer and more than one inspector of nuisances is of considerable consequence. But it is to be noticed there is no surveyor allowed for the rural district. When a place within a rural district applies for and obtains "urban powers," that place is then entitled to a surveyor.

The inspector of nuisances may also be surveyor. And the inspector of nuisances, as well as the medical officer, may be placed over two or more districts by the local authorities of such districts, with the sanction of the Local Government Board.

Every urban authority is required to provide and maintain such offices for their officers and servants as may be necessary for the transaction of their business.

In 1876 an Act was passed for making further provision for the prevention of the pollution of rivers. In 1878 an Act was passed to amend the Public Health Act of 1875 so far as it relates to water-supply, and in 1879 an additional Act was passed relating to interments.

A series of model bye-laws has been issued by the Local Government Board to assist the various authorities in framing bye-laws to suit their respective localities.

Having thus briefly indicated the development and final legal establishment of the office of inspector of nuisances in connection with every sanitary district in England and Wales, prominence must first be given to the General Orders issued by the Local Government Board, 13th March, 1880. It must be observed that when "the Act" is mentioned in the following

pages, this comprehensive Public Health Act, 1875, is the one intended to be understood, unless special reference is made to the contrary.

10th March, 1880.

GENERAL ORDER OF LOCAL GOVERNMENT BOARD.

Regulations as to Inspectors of Nuisances of Urban Sanitary Authorities, whose Salaries are partly repaid out of moneys voted by Parliament.

To the several Urban Sanitary Authorities, for the time being, in England and Wales ;—

And to all others whom it may concern.

Whereas by a General Order dated the 11th day of November, 1872, addressed to "The several Urban Sanitary Authorities in England and Wales constituted by the Public Health Act, 1872," the Local Government Board, acting under the authority conferred upon them by section 10 of that Act, prescribed Regulations with respect to the appointment, duties, salary, and tenure of office of inspectors of nuisances appointed by such Authorities, in all cases where any portion of the salary of any such officer was paid out of moneys voted by Parliament ;

And whereas it is required by section 189 of The Public Health Act, 1875, that every Urban Sanitary Authority shall from time to time appoint an inspector of nuisances, and by section 191 of that Act it is enacted that the Local Government Board shall have the same powers as it has in the case of a district medical officer of a Union, with regard to the qualification, appointment, duties, salary, and tenure of office of any officer of a Local Authority, any portion of whose salary is paid out of moneys voted by Parliament ;

And whereas Urban Sanitary Authorities are Local Authorities within the meaning of the last named section :

Now therefore, we, the Local Government Board, hereby order that the above-cited Order shall not apply to any inspector of nuisances appointed or re-appointed by any Rural Sanitary Authority after the Twenty-fifth day of March, One thousand eight hundred and eighty.

And we hereby order as follows with respect to the appointment, duties, salary, and tenure of office of every inspector of nuisances, any portion of whose salary is paid out of moneys voted by Parliament, and who may be appointed by any Urban Sanitary Authority after the Twenty-fifth day of March, One thousand eight hundred and eighty, or who, having been appointed by such Authority under the provisions of the above-cited Order, may be re-appointed by them after that date.

Appointment.

Art. 1. A statement shall be submitted to the Local Government Board, in a form to be supplied by them, shewing the population and area of the district of the Sanitary Authority, together with the salary intended to be assigned to the officer, and such other particulars as may be prescribed by such form.

Provided that where any such statement has been submitted to the said Board under the said Order of the Eleventh day of November, One thousand eight hundred and seventy-two, or under this Order, no further statement under this Article shall be necessary, unless required by the said Board.

Art. 2. When the approval of the Local Government Board has been given to the proposals contained in the statement submitted to them, the Sanitary Authority shall proceed to the appointment of an inspector of nuisances accordingly.

Art. 3. An appointment of an inspector of nuisances shall not be made unless an advertisement specifying the amount of salary proposed to be assigned, and the day fixed for such appointment, shall have appeared in some public newspaper circulating in the district at least seven days before the day so fixed.

Art. 4. Every officer shall be appointed by a majority of the members present at a meeting of the Sanitary Authority, and voting on the question.

Art. 5. Every appointment shall, within seven days after it is made, be reported to the Local Government Board by the clerk to the Sanitary Authority.

Art. 6. Upon the occurrence of a vacancy in the office of inspector of nuisances, the Sanitary Authority shall proceed to make a fresh appointment, which shall be reported to the Local Government Board as required by Art. 5 of this Order :

Provided always as follows :—

- (1.) If the Sanitary Authority desire to make any fresh arrangement with respect to the terms of the appointment, they shall, before filling up the vacancy, supply the particulars of the arrangement to the Local Government Board in the manner prescribed by Art. 1 of this Order in regard to the first appointment, and if the approval of the Local Government Board be given, absolutely or with modifications, the Sanitary Authority shall then proceed to fill up the vacancy according to the terms of the approval so given.
- (2.) If the vacancy arise from notice given by an officer of an intended resignation to take effect on a future day, the Sanitary Authority may elect a successor to such officer in conformity with the above regulations, at any time subsequent to such notice.
- (3.) If the Sanitary Authority deem it advisable that the vacancy should not be filled up forthwith, they may appoint a person to act temporarily, subject to the approval of the Local Government Board.

- (4.) In the case of any officer who holds his office for a specified term the Sanitary Authority may provide for the continuance of such officer, or appoint his successor, within three calendar months next before the expiration of such term.

Art. 7. If in the case of an officer who may have been appointed for a specified term, the Sanitary Authority should desire to renew his appointment for a further term or otherwise in conformity with the provisions of this Order, and no fresh arrangement should be proposed with respect to the terms of the appointment, it shall not be necessary for that purpose that Arts. 1, 2, and 3 of this Order should be complied with, but it shall be sufficient if the Sanitary Authority, at a meeting held after notice given at one of their two ordinary meetings next preceding such meeting, pass a resolution renewing the appointment accordingly on the expiration of the term for which it was made, and the Local Government Board sanction such resolution.

Art. 8. If any officer be at any time prevented by sickness or accident, or other sufficient reason, from performing his duties, the Sanitary Authority may appoint a person qualified as aforesaid to act as his temporary substitute, and may pay him a reasonable compensation for his services; and it shall not be necessary in any such case that Arts. 1, 2, and 3 of this Order shall be complied with, but Arts. 4 and 5 of this Order shall apply in every such case.

Tenure of Office.

Art. 9. Every officer shall continue to hold office for such period as the Sanitary Authority may, with the approval of the Local Government Board, determine, or until he die, or resign, or be removed by such Authority with the assent of the Local Government Board, or by the Local Government Board, or be proved to be insane by evidence which that Board shall deem sufficient.

Art. 10. The Sanitary Authority may at their discretion suspend any officer from the discharge of his duties, and shall, in case of every such suspension, forthwith report the same, together with the cause thereof, to the Local Government Board; and if the Local Government Board remove the suspension of such officer by the Sanitary Authority, he shall forthwith resume the performance of his duties.

Art. 11. Where any change in the duties or salary of any Officer may be deemed necessary, and he shall decline to acquiesce therein, the Sanitary Authority may, with the consent of the Local Government Board, but not otherwise, and after six months' notice in writing, signed by their clerk, given to such officer, determine his office.

Art. 12. A person shall not be appointed who does not agree to give one month's notice previous to resigning the office, or to forfeit such sum as may be agreed upon as liquidated damages.

Salary.

Art. 13. The Sanitary Authority shall pay to every officer such salary as may be approved by the Local Government Board.

Provided always, that the Sanitary Authority, with the approval of

the Local Government Board, may pay to any officer a reasonable compensation on account of extraordinary services, or other unforeseen or special circumstances connected with his duties or the necessities of the district.

Art. 14. The salary of every officer shall be payable up to the day on which he ceases to hold the office, and no longer, subject to any deduction which the Sanitary Authority may be entitled to make in respect of Art. 12 of this Order; and in case he shall die whilst holding such office, the proportion of salary (if any) remaining unpaid at his death shall be paid to his personal representatives.

Provided that an officer who may be suspended, and who may, without the previous removal of such suspension, resign or be removed under Art. 9 of this Order, shall not be entitled to any salary from the date of such suspension.

Art. 15. The salary assigned to every officer shall be payable quarterly, according to the usual Feast Days in the year, namely, Lady Day, Midsummer Day, Michaelmas Day, and Christmas Day; but the Sanitary Authority may pay to him at the expiration of every calendar month such proportion as they may think fit, on account of the salary to which he may become entitled at the termination of the quarter.

Art. 16. All salaries shall be considered as accruing from day to day, and be apportionable in respect of time accordingly, in pursuance of the provisions of "The Apportionment Act, 1870."

Duties.

Art. 17. The following shall be the duties of the inspector of nuisances in respect of the district for which he is appointed:—

- (1.) He shall perform, either under the special directions of the Sanitary Authority, or (so far as authorised by the Sanitary Authority) under the directions of the Medical Officer of Health, or in cases where no such directions are required, without such directions, all the duties specially imposed upon an inspector of nuisances by The Public Health Act, 1875, or by the Orders of the Local Government Board, so far as the same apply to his office.
- (2.) He shall attend all meetings of the Sanitary Authority when so required.
- (3.) He shall by inspection of the district, both systematically at certain periods, and at intervals as occasion may require, keep himself informed in respect of the nuisances existing therein that require abatement under The Public Health Act, 1875.
- (4.) On receiving notice of the existence of any nuisance within the district, or of the breach of any bye-laws or regulations made by the Sanitary Authority for the suppression of nuisances, he shall, as early as practicable, visit the spot, and inquire into such alleged nuisance or breach of bye-laws or regulations.
- (5.) He shall report to the Sanitary Authority any noxious or offensive businesses, trades, or manufactories established within

the district, and the breach or non-observance of any bye-laws or regulations made in respect of the same.

- (6.) He shall report to the Sanitary Authority any damage done to any works of water supply, or other works belonging to them, and also any case of wilful or negligent waste of water supplied by them, or any fouling by gas, filth, or otherwise, of water used for domestic purposes.
- (7.) He shall from time to time, and forthwith upon complaint, visit and inspect the shops and places kept or used for the sale of butchers' meat, poultry, fish, fruit, vegetables, corn, bread, flour, or milk, or as a slaughter-house, and examine any animal, carcase, meat, poultry, game, flesh, fish, fruit, vegetables, corn, bread, flour, or milk which may be therein; and in case any such article appear to him to be intended for the food of man, and to be unfit for such food, he shall cause the same to be seized, and take such other proceedings as may be necessary in order to have the same dealt with by a justice: Provided that in any case of doubt arising under this clause, he shall report the matter to the medical officer of health, with the view of obtaining his advice thereon.
- (8.) He shall, when and as directed by the Sanitary Authority, procure and submit samples of food, drink, or drugs suspected to be adulterated, to be analysed by the analyst appointed under "The Sale of Food and Drugs Act, 1875," and upon receiving a certificate stating that the articles of food, drink, or drugs are adulterated, cause a complaint to be made, and take the other proceedings prescribed by that Act.
- (9.) He shall give immediate notice to the medical officer of health of the occurrence within the district of any contagious, infectious, or epidemic disease; and whenever it appears to him that the intervention of such officer is necessary in consequence of the existence of any nuisance injurious to health, or of any overcrowding in a house, he shall forthwith inform the medical officer thereof.
- (10.) He shall, subject to the directions of the Sanitary Authority, attend to the instructions of the medical officer of health with respect to any measures which can be lawfully taken by an inspector of nuisances under The Public Health Act, 1875, for preventing the spread of any contagious, infectious, or epidemic disease of a dangerous character.
- (11.) He shall enter from day to day, in a book to be provided by the Sanitary Authority, particulars of his inspections and of the action taken by him in the execution of his duties. He shall also keep a book or books, to be provided by the Sanitary Authority, so arranged as to form, as far as possible, a continuous record of the sanitary condition of each of the premises in respect of which any action has been taken under The Public Health Act, 1875, and shall keep any other systematic records that the Sanitary Authority may require.

- (12.) He shall at all reasonable times, when applied to by the Medical Officer of Health, produce to him his books, or any of them, and render to him such information as he may be able to furnish with respect to any matter to which the duties of inspector of nuisances relate.
- (13.) He shall, if directed by the Sanitary Authority to do so, superintend and see to the due execution of all works which may be undertaken under their direction for the suppression or removal of nuisances within the district.
- (14.) In matters not specifically provided for in this Order, he shall observe and execute all the lawful orders and directions of the Sanitary Authority, and the Orders of the Local Government Board which may be hereafter issued, applicable to his office.

Given under the Seal of Office of the Local Government Board,
this Tenth day of March, in the year One thousand eight
hundred and eighty.

G. SCLATER-BOOTH, *President*.
JOHN LAMBERT, *Secretary*.

13th March, 1880.

GENERAL ORDER OF LOCAL GOVERNMENT BOARD.

Regulations as to Inspectors of Nuisances of Rural Sanitary Authorities, whose Salaries are partly repaid out of moneys voted by Parliament.

To the several Rural Sanitary Authorities, for the time being,
in England and Wales ;—

And to all others whom it may concern.

WHEREAS by a General Order dated the 11th day of November, 1872, addressed to "The several Rural Sanitary Authorities in England and Wales constituted by the Public Health Act, 1872," the Local Government Board, acting under the authority conferred upon them by section 10 of that Act, prescribed regulations with respect to the appointment, duties, salary, and tenure of office of inspectors of nuisances appointed by such Authorities, in all cases where any portion of the salary of any such officer was paid out of moneys voted by Parliament ;

And whereas it is required by section 190 of The Public Health Act, 1875, that every Rural Sanitary Authority shall from time to time appoint an inspector or inspectors of nuisances, and by section 191 of that Act it is enacted that the Local Government Board shall have the same powers as it has in the case of a district medical officer of a union, with regard to the qualification, appointment, duties, salary,

and tenure of office of any officer of a Local Authority, any portion of whose salary is paid out of moneys voted by Parliament ;

And whereas Rural Sanitary Authorities are Local Authorities within the meaning of the last-named section :

Now therefore, we, the Local Government Board, hereby order that the above cited Order shall not apply to any inspector of nuisances appointed or re-appointed by any Rural Sanitary Authority after the Twenty-fifth day of March, One thousand eight hundred and eighty.

And we hereby order as follows with respect to the appointment, duties, salary, and tenure of office of every inspector of nuisances, any portion of whose salary is paid out of moneys voted by Parliament, and who may be appointed by any Rural Sanitary Authority after the Twenty-fifth day of March, One thousand eight hundred and eighty, or who, having been appointed by such Authority under the provisions of the above cited Order, may be re-appointed by them after that date.

Appointment.

Art. 1. A statement shall be submitted to the Local Government Board, in a form to be supplied by them, shewing the population and area of the district or districts for which the Sanitary Authority propose to appoint an inspector or inspectors of nuisances, together with the salary intended to be assigned to each officer, and such other particulars as may be prescribed by such form.

Provided that where any such statement has been submitted to the said Board under the said Order of the Eleventh day of November, One thousand eight hundred and seventy-two, or under this Order, no further statement under this Article shall be necessary unless required by the said Board.

Art. 2. When the approval of the Local Government Board has been given to the proposals contained in the statement so submitted to them, the Sanitary Authority shall proceed to the appointment of an inspector or inspectors of nuisances accordingly.

Art. 3. An appointment of an inspector of nuisances shall not be made unless notice has been given at one of the two ordinary meetings next preceding the meeting at which the appointment is to be made by the Sanitary Authority, such notice being duly entered on the minutes, or unless an advertisement specifying the district or districts for which such appointment is to be made, together with the amount of salary proposed to be assigned, and the day fixed for such appointment shall have appeared in some public newspaper circulating in the district of the Sanitary Authority at least seven days before the day so fixed.

Art. 4. Every such officer shall be appointed by a majority of the members present at a meeting of the Sanitary Authority consisting of more than three members, or by three members, if no more be present.

Art. 5. Every appointment shall, within seven days after it is made, be reported to the Local Government Board by the clerk to the Sanitary Authority.

Art. 6. Upon the occurrence of a vacancy in the office of inspector of nuisances, the Sanitary Authority shall proceed to make a fresh appointment, which shall be reported to the Local Government Board as required by Art. 5 of this Order :

Provided always as follows :—

- (1.) If the Sanitary Authority desire to make any fresh arrangement with respect to the district or districts, or the terms of the appointment, they shall, before filling up the vacancy, supply the particulars of the arrangement to the Local Government Board in the manner prescribed by Art. 1 of this Order in regard to the first appointment, and if the approval of the Local Government Board be given, absolutely or with modifications, the Sanitary Authority shall then proceed to fill up the vacancy according to the terms of the approval so given.
- (2.) If the vacancy arise from notice given by an officer of an intended resignation to take effect on a future day, the Sanitary Authority may elect a successor to such officer in conformity with the above regulations, at any time subsequent to such notice.
- (3.) If the Sanitary Authority deem it advisable that the vacancy should not be filled up forthwith, they may appoint a person to act temporarily, subject to the approval of the Local Government Board.
- (4.) In the case of any officer who holds his office for a specified term, the Sanitary Authority may provide for the continuance of such officer, or appoint his successor, within three calendar months next before the expiration of such term.

Art. 7. If in the case of an officer who may have been appointed for a specified term, the Sanitary Authority should desire to renew his appointment for a further term or otherwise in conformity with the provisions of this Order, and no fresh arrangement should be proposed with respect to the district or districts, or the terms of the appointment, it shall not be necessary for that purpose that Arts. 1, 2, and 3 of this Order should be complied with, but it shall be sufficient if the Sanitary Authority, at a meeting held after notice given at one of their two ordinary meetings next preceding such meeting, pass a resolution renewing the appointment accordingly on the expiration of the term for which it was made, and the Local Government Board sanction such resolution.

Art. 8. If any officer be at any time prevented by sickness or accident, or other sufficient reason, from performing his duties, the Sanitary Authority may appoint a person qualified as aforesaid to act as his temporary substitute, and may pay him a reasonable compensation for his services ; and it shall not be necessary in any such case that Arts. 1, 2, and 3 of this Order shall be complied with, but Arts. 4 and 5 of this Order shall apply in every such case.

Tenure of Office.

Art. 9. Every officer shall continue to hold office for such period as

the Sanitary Authority may, with the approval of the Local Government Board, determine, or until he die, or resign, or be removed by such Authority with the assent of the Local Government Board, or by the Local Government Board, or be proved to be insane by evidence which that Board shall deem sufficient.

Art. 10. The Sanitary Authority may at their discretion suspend any officer from the discharge of his duties, and shall, in case of every such suspension, forthwith report the same, together with the cause thereof, to the Local Government Board ; and if the Local Government Board remove the suspension of such officer by the Sanitary Authority, he shall forthwith resume the performance of his duties.

Art. 11. Where any change in the extent of the district or districts of any officer, or in his duties or salary, may be deemed necessary, and he shall decline to acquiesce therein, the Sanitary Authority may, with the consent of the Local Government Board, but not otherwise, and after six months' notice in writing, signed by their clerk, given to such officer, determine his office.

Art. 12. A person shall not be appointed who does not agree to give one month's notice previous to resigning the office, or to forfeit such sum as may be agreed upon as liquidated damages.

Salary.

Art. 13. The Sanitary Authority shall pay to every officer such salary as may be approved by the Local Government Board.

Provided always, that the Sanitary Authority, with the approval of the Local Government Board, may pay to any officer a reasonable compensation on account of extraordinary services, or other unforeseen or special circumstances connected with his duties or the necessities of the district or districts for which he is appointed.

Art. 14. The salary of every officer shall be payable up to the day on which he ceases to hold the office, and no longer, subject to any deduction which the Sanitary Authority may be entitled to make in respect of Art. 12 of this Order ; and in case he shall die whilst holding such office, the proportion of salary (if any) remaining unpaid at his death shall be paid to his personal representatives.

Provided that an officer who may be suspended, and who may, without the previous removal of such suspension, resign or be removed under Art. 9 of this Order, shall not be entitled to any salary from the date of such suspension.

Art. 15. The salary assigned to every officer shall be payable quarterly, according to the usual Feast Days in the year, namely, Lady Day, Midsummer Day, Michaelmas Day, and Christmas Day ; but the Sanitary Authority may pay to him at the expiration of every calendar month such proportion as they may think fit, on account of the salary to which he may become entitled at the termination of the quarter.

Art. 16. All salaries shall be considered as accruing from day to day, and be apportionable in respect of time accordingly, in pursuance of the provisions of "The Apportionment Act, 1870."

Duties.

Art. 17. The following shall be the duties of an inspector of nuisances in respect of the district for which he is appointed, or if he shall be appointed for more than one district, or for part of a district, then in respect of each of such districts, or of such part :

- (1.) He shall perform, either under the special directions of the Sanitary Authority, or (so far as authorised by the Sanitary Authority) under the directions of the medical officer of health, or in cases where no such directions are required, without such directions, all the duties specially imposed upon an inspector of nuisances by The Public Health Act, 1875, or by the Orders of the Local Government Board, so far as the same apply to his office.
- (2.) He shall attend all meetings of the Sanitary Authority when so required.
- (3.) He shall by inspection of the district, both systematically at certain periods, and at intervals as occasion may require, keep himself informed in respect of the nuisances existing therein that require abatement under The Public Health Act, 1875.
- (4.) On receiving notice of the existence of any nuisance within the district, or of the breach of any bye-laws or regulations made by the Sanitary Authority for the suppression of nuisances, he shall, as early as practicable, visit the spot, and inquire into such alleged nuisance or breach of bye-laws or regulations.
- (5.) He shall report to the Sanitary Authority any noxious or offensive businesses, trades, or manufactories established within the district, and the breach or non-observance of any bye-laws or regulations made in respect of the same.
- (6.) He shall report to the Sanitary Authority any damage done to any works of water supply, or other works belonging to them, and also any case of wilful or negligent waste of water supplied by them, or any fouling by gas, filth, or otherwise, of water used for domestic purposes.
- (7.) He shall from time to time, and forthwith upon complaint, visit and inspect the shops and places kept or used for the sale of butchers' meat, poultry, fish, fruit, vegetables, corn, bread, flour, or milk, or as a slaughter-house, and examine any animal, carcase, meat, poultry, game, flesh, fish, fruit, vegetables, corn, bread, flour, or milk which may be therein ; and in case any such article appear to him to be intended for the food of man, and to be unfit for such food, he shall cause the same to be seized, and take such other proceedings as may be necessary in order to have the same dealt with by a justice : Provided, that in any case of doubt arising under this clause, he shall report the matter to the medical officer of health, with the view of obtaining his advice thereon.
- (8.) He shall, when and as directed by the Sanitary Authority, procure and submit samples of food, drink, or drugs suspected to

be adulterated, to be analysed by the analyst appointed under "The Sale of Food and Drugs Act, 1875," and upon receiving a certificate stating that the articles of food, drink, or drugs are adulterated, cause a complaint to be made, and take the other proceedings prescribed by that Act.

- (9.) He shall give immediate notice to the medical officer of health of the occurrence within the district of any contagious, infectious, or epidemic disease; and whenever it appears to him that the intervention of such officer is necessary in consequence of the existence of any nuisance injurious to health, or of any overcrowding in a house, he shall forthwith inform the medical officer of health thereof.
- (10.) He shall, subject to the directions of the Sanitary Authority, attend to the instructions of the medical officer of health with respect to any measures which can be lawfully taken by an inspector of nuisances under The Public Health Act, 1875, for preventing the spread of any contagious, infectious, or epidemic disease of a dangerous character.
- (11.) He shall enter from day to day, in a book to be provided by the Sanitary Authority, particulars of his inspections and of the action taken by him in the execution of his duties. He shall also keep a book or books, to be provided by the Sanitary Authority, so arranged as to form, as far as possible, a continuous record of the sanitary condition of each of the premises in respect of which any action has been taken under The Public Health Act, 1875, and shall keep any other systematic records that the Sanitary Authority may require.
- (12.) He shall at all reasonable times, when applied to by the medical officer of health, produce to him his books, or any of them, and render to him such information as he may be able to furnish with respect to any matter to which the duties of inspector of nuisances relate.
- (13.) He shall, if directed by the Sanitary Authority to do so, superintend and see to the due execution of all works which may be undertaken under their direction for the suppression or removal of nuisances within the district.
- (14.) In matters not specifically provided for in this Order, he shall observe and execute all the lawful orders and directions of the Sanitary Authority, and the Orders of the Local Government Board which may be hereafter issued, applicable to his office.

Given under the Seal of Office of the Local Government Board, this Thirteenth day of March, in the year One thousand eight hundred and eighty.

G. SCLATER-BOOTH, *President*.
JOHN LAMBERT, *Secretary*.

CHAPTER II.

VARIED DUTIES CONSIDERED.

WE are now brought to a consideration of the duties of an inspector of nuisances. They are both manifold and diverse.

He derives his powers from three sources:—the Public Health Act, 1875; and the General Orders of the Local Government Board; and the bye-laws of his own Sanitary Authority, that are based upon it; as well as special directions from his authority concerning special cases.

The inspector has the duty of systematic inspection; the duty of systematic report of his investigations to the Board and regular attendance upon the Authority to do so; the duty of insistence upon additional provision for the maintenance of health where sufficient is wanting; and the duty of repression of existing nuisances. And each of these four leading lines has its subdivisions.

The inspector must not draw only upon his own experience for solutions of the various difficulties with which he has to deal. For example, in the case of a deficiency in a water supply, one officer, used to large schemes and ample resources, might argue that nothing but an addition to the supply would meet the necessity of the public health; while another, who may have been a plumber, would declare that a due revision of all the fittings in the public lines of conduit, and in private houses, would cause sufficient gain from waste to cover the deficiency; whilst a third, who may have had police experience, would affirm the shortcoming

was due to the evil practices of mal-doers in setting taps running and leaving the water to waste. It need scarcely be remarked that every case must be looked at from every point of view.

On taking office, it is a good plan for the inspector to go over the whole of his district, whether it be urban or rural, and note the existing condition of it. His notes will be found of much service to him, for reference, as time goes by ; and when in full possession of a knowledge of all the sanitary features over which he is called to preside, he will, naturally, turn to the most serious defects for his first efforts at improvement. These remedied, the next in importance will receive his attention, and so on, till his district is placed on a good sanitary basis. This will be a work of both time and effort, albeit the same ground has been gone over before by others equally desirous of achieving the same result. Fresh nuisances crop up everywhere ; old ones increase and accumulate ; and more advanced sanitary knowledge will point out, as injurious to health, features and conditions that would have passed unquestioned in former years. But persistence in a good cause has, at length, its reward ; and what looks, in the beginning, almost unattainable, eventually, with the aid of perseverance, becomes an accomplished service.

When the urban inspector finds all the sewers and drains in good working order, all the courts and yards paved and lime-washed, every house supplied with water and kept free from damp by efficient guttering and spouting, cellar dwellings—if not abolished in every instance—at least rendered as light and dry as possible, all slaughter-houses, ashpits, and privies kept a proper distance from habitations, he may consider himself at liberty to attack more special evils, which, it is not too much to say, he will speedily be able to find. And when the rural sanitary inspector finds all

the villages in his district supplied with spring water and ample sewerage, all the cottages supplied with gutters, spouting, and drains, all the cow-byres and pig-sties placed at a proper distance from habitations, he may also turn his attention more unreservedly to the requirements of the day.

Quite apart from these permanent constructional features, so conducive to the general health, are the constantly recurring duties of inspection and disinfection in connection with infectious diseases ; surveillance as to lodging-houses and overcrowding ; surveillance of scavenging ; factories, work-shops, or work-places ; and food. These call for daily observation and alertness. (The institution of village scavengers in rural districts would be a step in the right direction, as will be stated further on.)

Every sensible person will agree that the varied duties of an inspector should be performed with much discretion. Only the general good is desired by the legislature, *i.e.* the greatest amount of good to the greatest number of persons. On receiving information of a nuisance, he should visit the place in which it exists in time to be able to bring the matter before his Authority at the next meeting, and make the necessary inquiries with all courtesy. He should remember he represents the law : he is as the strong to the weak. Good-humour, good words, forbearance, explicitness of explanation and clearness of instruction, will be found most serviceable. That officials have not always practised proper courtesy is but too evident in the indifferent reputation that is implied by the term " Jack-in-office." Nevertheless, he must never lose sight of the main fact that it is his duty to see the sanitary laws are not evaded.

Much is brought into a sanitary question that does not belong to it, but yet involves it in most of its difficulties. Sometimes, tenants, leaving, wish to worry

landlords by complaining and by magnifying nuisances. Sometimes agents have their systems of rotations, and are unwilling to take up a sanitary evil out of its turn on their books. Often, too, property is in the hands of agents in distant places, and long correspondences must ensue before any remedy can be applied. Tenemented properties are a fruitful source of complications. The seasons, too, are not without their influence in producing delays, as in instances where farmers cannot remove deposits from farm-cottages and pit-villages, or miners' dwellings, on account of the constant employment of their horses in critical farming operations ; or where all the men of a fishing village are otherwise occupied for the time being ; and in some other ways which will be detailed under remarks upon the various regulations. Floods, deep snows, frosts, and droughts bring their own special evils that are independent of these side-way influences.

To give an instance of what may be called an outside difficulty :—At the mouth of a certain river, well-known to anglers, there is a pretty, quaint-looking little village frequented in the summer months as a sea-bathing place. The grey little main street has rough pebble-paved ways, with here and there picturesque oriel windows and overhanging balconies. There are gardens sloping down towards the river at the back of one line of the houses, and in other parts of the street there are smaller streets running to the right and left out of it. Down on the shore there is a wide grassy margin to the sea, and an undulating line of steep banks or "links." A parochial committee has been formed to regulate its sanitary condition. The inhabitants were in the habit of disposing of the refuse from their ashpits by throwing it on the shore, or the grassy margin of the links, or into the river to be left uncovered at every tide. The parochial committee recommended the Authority to rule that they should

adopt the box system for their refuse, and do away with the unwholesomeness of retaining large masses of refuse close to their dwellings for long periods at a time. A dépôt was formed in a suitable position. The inhabitants raised no objection, but a difficulty arose all the same, for the carters struck and refused to fall into the plan, because they preferred the old system of removing large quantities at a time. As new buildings were in course of erection in conformity to the bye-laws, which require that ashpits should not be larger than is required to hold a fortnight's refuse, it was necessary that the rule should be carried out; consequently they were informed that carters would be brought from a distance to carry out the regulation; and they, eventually, conformed.

Here is another outside difficulty. About twenty-five years ago the most influential people in the historic village of W. subscribed for the purpose of procuring a good water supply. The village was then one wide street, with a grand old castle at one end of it, and a venerable church at the other; and plenty of water was easily obtained for every house. In these latter days, however, there are fifteen new houses built on a low but lovely site on the bank of the tidal river; and there is no drinking water, whatever, for them. The inhabitants, justifiably, demand water; and there is not the least difficulty about a supply, except two great questions that lie quite outside the real sanitary need. In the first place, the present supply to the rest of the village must not be touched, because it belongs to a certain set of trustees of the original subscribers; and in the second the bringing of an altogether new supply to the place would involve a charge of the cost upon the whole township; which course is looked upon as unfair, when it is only the little group of new houses that is to be benefited. The proper course here, and which

will probably be taken eventually, is for the trustees to hand over the first supply to their Authority, who would then be in a position to allow the new houses to benefit by it, without unnecessary cost.

Mention has been made in a previous chapter of the superiority enjoyed by a rural sanitary authority over an urban one in the power to appoint one or more inspectors of nuisances, instead of one only. In large towns, this limit of the urban authorities has been felt to be inconvenient in some particulars. Section 116 gives any medical officer or inspector of nuisances power, at all reasonable times, to inspect and examine any animal, carcase, meat, poultry, game, flesh, fish, fruit, vegetables, corn, bread, flour or milk exposed for sale, or deposited in any place for the purpose of sale, or of preparation for sale, and intended for the food of man; and if any such animal, carcase, meat, poultry, game, flesh, fish, fruit, vegetables, corn, bread, flour or milk appears to such medical officer or inspector to be diseased or unsound or unwholesome or unfit for the food of man, he may seize and carry away the same himself, or *by an assistant*, in order to have the same dealt with by a justice. Here, it is evident, the inspection and detection rests with the one medical officer and the one inspector. Any assistant employed can only seize and carry away the unsound articles to be condemned by the justice. Section 118 corroborates this view of Section 116, for it sets forth that any person who in any manner prevents any *medical officer of health or inspector of nuisances* from entering any premises and inspecting any animal, carcase, meat, poultry, game, flesh, fish, fruit, vegetables, corn, bread, flour, or milk exposed or deposited for the purpose of sale, or of preparation for sale, and intended for the food of man, or who obstructs or impedes any such medical officer or inspector, *or his assistant, when carrying into execution*

the provisions of this Act, shall be liable to a penalty not exceeding five pounds. Some of the inconvenience of this limitation is, however, mitigated in Section 119. This gives any justice power to grant a warrant to a medical officer of health, inspector of nuisances, or *other officer of a local authority*, to enter any building on complaint made on oath that such officer has reason for believing that there is kept or concealed there anything intended for the food of man in an unsound condition. (The inspector must observe he is not authorised to do more than seize and carry away any unsound articles of food. The order of a justice is required to enable him to destroy them.)

The inspector is well protected by the Act. If duly appointed, he is not subject to any personal liability. He has almost unlimited power of entry, such limitations as there are in the hours of inspection (between 9 A.M. and 6 P.M.) being virtually extended to any hour when a nuisance is likely to arise in the progress of any business. And he has power to continue his visits from time to time to ascertain whether orders of abatement or prohibition have been complied with, at any hour during which business is in progress or is usually carried on. Section 103 of the Act sets forth that any person who refuses to obey an order of a justice for admission of the Local Authority or *any of their officers* on any premises shall be liable to a penalty not exceeding five pounds. And Section 265 gives the following protection, not only to the authorities, but to their officers:—

“265. No matter or thing done, and no contract entered into by any Local Authority or joint board or port sanitary Authority, and no matter or thing done by any member of any such Authority, or by *any officer of such Authority or other person whomsoever acting under the direction of such Authority*, shall, if the matter or thing were done or the contract were

entered into *bond fide* for the purpose of executing this Act, subject them or any of them personally to any action, liability, claim or demand whatsoever; and any expense incurred by any such Authority, member, officer, or other person acting as last aforesaid shall be borne and repaid out of the fund or rate applicable by such Authority to the general purposes of this Act."

Lodging-house keepers are also liable to a penalty of five pounds if they refuse access to any officer or the Local Authority.

Three kinds of nuisances on premises are mentioned in Section 49:—The keeping of swine in any dwelling-house, stagnant water in cellars or other places, and overflow or soakage from water-closets, privies, and cesspools.

Seven kinds of nuisances are specially mentioned in Section 91:—

"(1.) Any premises in such a state as to be a nuisance or injurious to health:

"(2.) Any pool, ditch, gutter, watercourse, privy, urinal, cesspool, drain or ashpit so foul or in such a state as to be a nuisance or injurious to health:

"(3.) Any animal so kept as to be a nuisance or injurious to health:

"(4.) Any accumulation or deposit which is a nuisance or injurious to health:

"(5.) Any house or part of a house so crowded as to be dangerous or injurious to the health of the inmates, whether or not members of the same family:

"(6.) Any factory, workshop, or work-place (not already under the operation of any general Act for the regulation of factories or bakehouses) not kept in a cleanly state, or not ventilated in such a manner as to render harmless as far as practicable any gases, vapours, dust, or other impurities generated in the course of the work carried on therein that are a

nuisance or injurious to health, or so overcrowded while work is carried on as to be dangerous or injurious to the health of those employed therein :

"(7.) Any fire-place or furnace which does not as far as practicable consume the smoke arising from the combustible used therein, and which is used for working engines by steam, or in any mill, factory, dye-house, brewery, bakehouse or gaswork, or in any manufacturing or trade process whatsoever ; and any chimney (not being the chimney of a private dwelling-house) sending forth black smoke in such a quantity as to be a nuisance, shall be deemed to be nuisances liable to be dealt with summarily in manner provided by this Act : Provided—

"First. That a penalty shall not be imposed on any person in respect of any accumulation or deposit necessary for the effectual carrying on any business or manufacture if it be proved to the satisfaction of the Court that the accumulation or deposit has not been kept longer than is necessary for the purposes of the business or manufacture, and that the best available means have been taken for preventing injury thereby to the public health :

"Secondly. That where a person is summoned before any Court in respect of a nuisance arising from a fire-place or furnace which does not consume the smoke arising from the combustible used in such fire-place or furnace, the Court shall hold that no nuisance is created within the meaning of this Act, and dismiss the complaint, if it is satisfied that such fire-place or furnace is constructed in such manner as to consume as far as practicable, having regard to the nature of the manufacture or trade, all smoke arising therefrom, and that such fire-place or furnace has been carefully attended to by the person having the charge thereof."

Concerning some of these matters there are "saving" clauses. Before taking any steps in the matter of the

great smoke nuisance, for instance, the inspector, besides satisfying himself that all has not been done that can be done for its amelioration, would do well to look to Section 334, which contains a "saving for mines," &c. :—

"Nothing in this Act shall be construed to extend to mines of different descriptions so as to interfere with or to obstruct the efficient working of the same ; nor to the smelting of ores and minerals, nor to the calcining, puddling, and rolling of iron and other metals, nor to the conversion of pig iron into wrought iron, so as to obstruct or interfere with any of such processes respectively."

With regard to the other items mentioned in this list, likewise, considerable care must be exercised by the inspector. He must qualify himself to form a just opinion by ascertaining the decisions of competent authorities on the various subjects. For instance, he should know the amount of cubic space required by every individual in rooms occupied by night as well as by day ; the precise distance to be maintained between a dwelling and a pigsty ; and so on. The bye-laws of some authorities are more restricting than others in these limits.

CHAPTER III.

REGULATIONS AS TO INSPECTORS OF NUISANCES.

WE will now proceed to consider the fourteen regulations for inspectors of nuisances set out in the General Order of the Local Government Board, March 13th, 1880, described, it will be observed, in identical terms, and addressed to the several rural sanitary authorities in England and Wales constituted by the Public Health Act, and to the several urban sanitary authorities, for the time being, in England and Wales, and to all others whom it may concern.

(1.) In the first place the General Orders state he shall perform, either under the special directions of the Sanitary Authority, or (so far as authorised by the Sanitary Authority), under the directions of the medical officer of health, or in cases where no such directions are required *without such directions*, all the duties specially imposed upon an inspector of nuisances by the Public Health Act, 1875, or by the orders of the Local Government Board. Here, the inspector has three sources indicated to him for the exercise of his powers. He is to follow out *all* the instructions given him by the Sanitary Authority to which he belongs. He is to carry out any directions given him by the medical officer belonging to it. And, independently of them, he is to perform all the duties assigned to inspectors under the Act, concerning which no directions are required. In most cases the last-mentioned proceedings would give rise to the first-mentioned directions; for, in the course of his investigations, on his discovery of any complications respecting offences

he would, naturally, apply to the Authority at their next meeting for instructions. He would also report to them the result of his inquiries into any complaint he might have received. And, further, any difficulty arising from his investigations in matters of which the medical officer has special knowledge, would certainly be referred to that officer, whose decision as to what steps were necessary to take would have to be acted upon.

(2.) The second states he shall attend all meetings of the Sanitary Authority when so required. The use of this regulation is too manifest to require comment. It is well, however, to attend every meeting as a matter of course, unless restricted from doing so. The inspector, thus, keeps himself conversant with the sanitary business of his district, and his own knowledge and experience become enlarged.

(3.) The third requires inspection of the district, both systematically at certain periods and at intervals as occasion may require, to the end that he shall keep himself informed of the nuisances existing in it that require abatement under the Act. This includes the most laborious portion of his duties, and requires discrimination. Some parts of a district are more liable to nuisances at one time than another, and these should be inspected at the seasons when offensive conditions are most likely to be present. It would be well to make a rule to visit slaughter-houses on killing days, and on the day immediately after killing days, when the sources of mischief will be more apparent than when they have been, perhaps, partially removed. The want of provision of proper receptacles for the manure, offal and garbage, or of channels in the pavement for the blood, would be then evident. The ultimate place of deposit of the offal and garbage should be also looked at at times when smells are most likely to arise, and this should

be sufficiently removed from habitations to be in-offensive. Waste of water is most observable at certain seasons, too. The various nuisances arising from such occupations as candle-making, soap-boiling, only arise periodically, and consequently should be seen to at the particular periods when they occur. Skinneries and knackers'-yards have their days, too, of special offensiveness. And so, also, have places where tripe is prepared ; where fish is gutted ; and, in a less degree, cattle auction rings. (The droppings from sheep penned in pens have been held to be a nuisance.)

(4.) The fourth regulation requires the inspector to give early attention to any notice he may receive concerning the existence of any nuisance within his district, or of any breach of the bye-laws or regulations of his Sanitary Authority. He is to visit the spot as soon as practicable, and inquire into the facts of the case. In towns these notices or complaints are most frequent concerning the absence of water ; or temporary stoppage of supply ; or the accumulations in a neighbour's ashpit ; stoppage of sewers ; soakage of sewerage ; offensive animals kept by neighbours ; where two or more properties are drained with the same drain, which becomes stopped ; neighbour's spouting out of order, causing annoyance. They should be all entered in a book kept for the purpose. Such as are likely to be removed on the service of a notice from the inspector can be so treated ; for others, where there is likely to be delay or difficulty, he must apply to his Authority for special instructions before action. His attention must be always applied to settle whether a grievance is merely a landlord's business, and not in the province of the Authority.

In rural districts complaints are most frequent concerning damp cottages, no water, neighbour's

pigeons and chickens, neighbour's ashpits, killing animals close to dwellings, manure heaps too close to dwellings.

(5.) The fifth regulation requires the inspector to report to his Sanitary Authority any noxious or offensive businesses, trades or manufactories established within the district, and the breach or non-observance of any bye-laws or regulations made in respect of the same. In some of the large towns the local regulations or bye-laws are numerous, and consequently require minute attention. For general purposes it may be sufficient to note the difference between the two qualities specified to be reported. "Noxious" is defined as "productive of injury;" "offensive" represents "causing anger, disgusting, displeasing, disagreeable, noisome, causing pain." The Public Health Act, 1875, specifies that any person who establishes the trades of blood-boiler, bone-boiler, fellmonger, soap-boiler, tallow-melter, tripe-boiler, or any other noxious or offensive trade, business or manufacture without the consent of the Authority of the district, is liable to a penalty not exceeding fifty pounds, and a further penalty of forty shillings for every day on which the offence is committed. Smell, smoke, danger of fire and explosion, pollution of water, noise, injurious vapours and emanations, dust, and danger from animals, as in slaughter-houses and menageries, may be considered as bringing trades into this class.

For the information of the inspector a list is here subjoined of various diseases produced by certain employments, as drawn up by the late Dr. Edward Smith:—

The injurious effects of trades upon health result from a variety of causes, as, for example, the mechanical or chemical action of the inhaled particles upon the air-passages; the action upon special organs or the general system of substances introduced into the blood; the in-

halation of air rendered impure by over-crowding, or the fumes of gas combustion ; and close confinement.

The following have been well established :—

1. Throat, nose, and pulmonary affections which are due to the inhalation of solid particles :

Pottery workers, china scourers, grinders of steel, button makers, pin pointers, weavers, flax hacklers and spinners, grindstone makers, cement manufacturers, sulphuric acid makers, operatives in alkali, and numerous chemical works, and compositors.

2. Other causes of disease :

Brassfounders, coppersmiths, and tin-plate workers, sometimes have a peculiar ague.

Plumbers, painters, manufacturers in white lead, are liable to paralysis.

Workers in mercury, as silvering mirrors and water gilding, are subject to a form of paralysis and salivation called "mercurialismus."

Workmen in arsenical papers for walls and artificial flowers suffer from slow poisoning, and arsenic has been detected in their urine.

Chimney-sweeps subject to cancer.

Workers with phosphorus, as in making lucifer matches, lime-burners, well-sinkers, coal-miners, are liable to suffocation from the inhalation of carbonic acid and other poisonous or explosive gases.

Besides these we hear of the "standing evil" of young women obliged to stand for hours at a time in shops, of the trials of cooks exposed to fierce heat in cooking, of housemaid's swollen knees, &c., all capable of amelioration by various contrivances.

(6.) The sixth regulation brings the inspector into communication with a different branch of the public service, viz., the water supply. "He shall report to the Sanitary Authority any damage done to any works of water supply, or other works belonging to them, and also any case of wilful or negligent waste of water supplied by them, or any fouling by gas, filth, or otherwise of water used for domestic purposes." As both urban and rural Authorities have power to construct and maintain waterworks or hire them, and dig wells, it follows that the care of the water supply is an important item in the inspector's duties. The Public Health Act enacts a penalty of two hundred pounds from any person engaged in the manufacture of gas who causes or suffers to be brought,

or to flow, into any stream, reservoir, aqueduct, pond or place for water, or into any drain or pipe communicating therewith, any washing or other substance produced in making or supplying gas, and a further fine of twenty pounds for every day during which the offence is continued, after notice from the Local Authority. The foulings of water with which the rural sanitary inspector will have to deal chiefly, will arise from the fouling of wells by the proximity of stables, cow-byres, and pig-sties. Wells in country places are often found at a lower elevation than the surrounding farm-buildings, whence it follows that all the soakage from the animals kept in proximity to them must find its way into them. All well water should be looked upon with suspicion, at all events till its purity has been thoroughly tested and established. Sometimes cisterns, too, are allowed to become so fouled as to cause the use of the water in them to give rise to disease. A fertile source of pollution exists where the supply of water to waterclosets is still conveyed direct from the main, which arrangement, unfortunately, was usual at one time, though now generally discontinued when observed. Defective fittings, admitting the contamination of water by sewage gas, are known to be a source of diphtheria. Traps may be badly made, so that the overflow does not efficiently cover the dip, leaving the sewage gas free to ascend; and the water in traps sometimes dries up, when not in use, leaving the openings quite uncovered. It is desirable, therefore, to notice whether the apparatus is in good working order everywhere.

(7.) The seventh regulation runs thus:—He shall from time to time and forthwith upon complaint, visit and inspect the shops and places kept or used for the sale of butchers' meat, poultry, fish, fruit, vegetables, corn, bread, flour, or milk, or as a slaughter-house, and examine any animal, carcase, meat, poultry, game,

flesh, fish, fruit, vegetables, corn, bread, flour, or milk which may be therein ; and in case any such article appear to him to be intended for the food of man, and to be unfit for such food, he shall cause the same to be seized, and take such other proceedings as may be necessary in order to have the same dealt with by a justice : provided that in any case of doubt arising under this clause, he shall report the matter to the medical officer of health, with the view of obtaining his advice thereon. The discovery of the extent to which trichinæ are present in pork, has caused great alarm to be felt, not only as regards butchers' meat of every kind, but also fish. So far as we have gone, however, it is meat only that has to be scrutinised for this fearful parasite. A correspondent of the *Manchester Guardian* raised the question recently, whether certain worms found in mackerel were dangerous to man, which brought forward, in the *Lancet*, a statement to the effect, that though more than a dozen species of entozoa afflict mackerel none of them are injurious to man, as in the parasites found in animals these nematoid worms have to pass into other systems to become mature, but fortunately their field of development is the body of some larger fish, and not the human frame. Staleness in fish, sufficient to cause the presence of decomposition, would be a proper reason to consider it unfit for human food. In the case of meat there are many questions to be considered. Some authorities differ in opinion as to the amount of disease in animals that would render their flesh unfit for food. It is asserted that disease in the glands, or inflammation of the lungs, does not necessarily render the flesh of an animal unfit for food. Shepherds are known to eat the flesh of sheep that have died from exposure on the hills, and to "cure" their hams for keeping and subsequent eating, without any

ill effects ; and some Scotch farmers affirm that the flesh of sheep dying from a disease called "braxy" is not injurious to health. Nevertheless, too much caution can scarcely be exercised. In any case of *doubt*, it is the duty of the inspector to report the matter to the medical officer, who is to give him his advice. Dr. Livingstone ascertained that natives of South Africa, or Europeans, who ate the flesh of animals affected with pleuro-pneumonia, were afflicted with malignant carbuncle. And cases of death from eating diseased meat are of authenticated occurrence. Sausages made of bad meat caused very disastrous consequences to sixty-four persons who partook of them, and death to one person on one occasion. But all meat is not bad that looks of a poor quality, for absence of fat and dryness of fibre are sometimes only characteristics of old age. The question has been raised too, whether animals killed in parturition are unfit for food. In a case tried at Lincoln, where a sheep had been killed because it was not able to lamb, the experts considered the flesh was not fit for food, and the prosecution was successful. Recently, at the Taunton Police Court, a butcher was found guilty of being the owner of seventy pieces of pork deposited for sale that were unfit for food. The medical officer of health pronounced it as likely to impart disease to any person or animal that ate of it, and the butcher was sentenced to pay 5*l.* and costs, or in default to be imprisoned for one month. The annual blue-book containing the report of the medical officer of the Local Government Board for 1879 contains a notice of a parasite found in the body of a boy who died on board the school-ship *Cornwall*. This was thought at first to be the trichina flesh-worm ; but Dr. Bastian has examined it from a helminthological point of view, and finds it belongs to the genus *Pelodera*, which was not supposed to invade the human body. Whether

this second fatal worm gains entrance to the human stomach by means of meat, or by means of raw fruits or vegetables contaminated with it, or by means of minute slugs, or by drinking water containing much organic sediment in which ova might be present, has yet to be ascertained.

Within the last ten years seventy epidemics of infectious diseases have been traced to the consumption of impure milk. Perhaps that which has recently taken place in Aberdeen is as remarkable as any. This case has just been investigated on behalf of the Scotch Board of Supervision by Mr. Andrew Rutherford and Dr. Littlejohn ; and the *Sanitary Record* for May, 1881, gives particulars of it :—

Three hundred persons partaking of milk from one dairy, and no other persons, were suddenly attacked with symptoms of an unknown disorder, consisting of rigors, febrile symptoms, enlarged tonsils, swelling of the lymphatic glands of the neck and those above the clavicle, and extreme prostration. When improvement set in there was often a sudden relapse, with increased severity of symptoms. These relapses occurred, sometimes, three and four times, and left the patients extremely weak. It is reported that a specimen of the milk contained organisms that are new to science. As some clue to the cause of this visitation it may be noted the water supply for the cows came from a large uncovered cistern in a byre where thirty of them were kept ; and, when analysed, this water was found to be bad. Probably, further inquiry would shew that in similar cases the milk has been kept uncovered in unwholesome surroundings. Seeing that milk has been intended for immediate consumption, the practice of keeping it for some hours before use brings artificial conditions to it for which it is not provided. Covers for all vessels in which milk is kept have been recommended. The best method for taking a sample

of milk is stated to be as follows :—The milk should be well stirred and a sample taken from the middle by inserting an inverted beaker in the liquid, reversing and drawing it out.

Tinned meats have been found unfit for food. Thirty-eight tins exposed for sale in Newcastle, recently, were seized by the inspector for the borough of Newcastle, who applied to the sitting magistrates for authority to destroy them. As the vendor did not know the condition of the meat inside the tins, no blame was attached to him. But the bench made an order for the meat to be destroyed.

(8.) The eighth regulation in the General Orders states the inspector shall procure and submit samples of food, drink, or drugs suspected to be adulterated, when directed by his Authority, for analysis by the analyst appointed under "The Sale of Food and Drugs Act, 1875," and upon receiving a certificate stating that the articles of food, drink, or drugs are adulterated, cause a complaint to be made, and take the other proceedings prescribed by that Act. As the inspector is only directed to procure samples when instructed to do so by his Authority, there is but little responsibility for him in this regulation, except that of care that the samples when submitted to the analyst are in the same condition as when he procured them. There has been a very considerable decrease of adulteration in the last few years. The duty of instituting proceedings appears to rest with the Authority and not with the inspector. In the Adulteration of Food, Drugs, &c. Act, 1872, the inspectors of weights and measures and the inspectors of markets were equally called upon to perform this duty at the discretion of the local authority. For samples of water taken for analysis, "Winchester quart" bottles are required. They must be well washed in the same water of which the inspector is

going to take a specimen, and when filled, stoppered, and sealed, and a label put on with the date and the name of the place from which the water is obtained. The question of the purity of water crops up more frequently in rural districts than that of the deterioration of any other kind of drink. The following case is extracted from the *Sanitary Record*, April 1881 :— A shopman of Dundee was charged with selling one pound of butter that was adulterated.

Two policemen stated they went to the shop and asked for 1 lb. of butter, for which they paid 1s. Before leaving the shop they told Brough and his master that they had bought it for the purpose of analysis. Brough and Turnbull thereupon directed the attention of the policemen to the fact that the paper in which their purchase had been wrapped bore a notice to the following effect :—“Mixed butter. Notice, to the best of my judgment, I purchase none but genuine butter, but as it is impossible for me to get every cask subjected to analysis, I sell it as butterine.” Mr. Macdougall, public analyst, said he had analysed the article sold, and found it contained fat to an extent not under 75 per cent. The public prosecutor, in asking a conviction, said the case had been brought on public grounds, and the decision of his lordship would be regarded with wide-spread interest. Sheriff Cheyne said that the officers had asked for butter and were served with butterine, a very inferior article. Looking to the large proportion of foreign ingredients in this case, he must regard it as having been introduced with a fraudulent intention, and he therefore found the charge proved, and imposed a penalty of £5 and costs.

(9.) The ninth regulation requires the inspector to give immediate notice to the medical officer of health of the occurrence within the district of any contagious, infectious, or epidemic disease; and whenever it appears to him that the intervention of such officer is necessary in consequence of the existence of any nuisance injurious to health, or of any overcrowding in a house, he shall forthwith inform the medical officer of health thereof. It will be, therefore, necessary in the first place for him to be certain which diseases are contagious, infectious, and epidemic. These are fevers of various kinds, small-pox, diphtheria, cholera and influenza. Scarlatina and measles

will frequently come under his notice also, and may be sometimes of a character sufficiently serious to require the attention of the medical officer. He will be always doing a good service if he can impress upon people not to expose themselves to infection unnecessarily by visiting their neighbours while suffering from contagious diseases, and persuade them not to allow their children to do so either. He might remind them there are other ways of shewing sympathy and performing kind actions for the sick than by running the risk in question. And he might advocate the use of disinfectants, not only in the rooms where the sick lie, but in tenemented properties, in every room and on the staircases, and in the adjoining premises. His recommendation to the masters and mistresses of schools to keep saucers or bowls of some harmless disinfectant, out of the reach of their scholars, in their schoolrooms in seasons of epidemics might be too of much service, together with any further precautions suggested by the medical officer. This is a time when all sewers that admit of flushing should be well flushed, and all drains should be kept clear and freely disinfected. Any keeper of a common lodging-house who fails to give notice when any person in his house has been confined to bed with an infectious disease is liable to a penalty not exceeding five pounds, and a further penalty not exceeding forty shillings for every day during which the offence continues. To reduce the liability to sickness, the walls and ceilings of every lodging-house must be whitewashed in the first week in every April and October. The penalty for neglect of this annual cleansing is forty shillings.

Concerning how to stamp out small-pox, Dr. Cameron, M.P., writes : "There is no zymotic disease which, properly dealt with, is so much under command as small-pox. The principal means by which to

prevent its spread are two—the isolation of small-pox patients and the vaccination or re-vaccination of all persons who are exposed to infection. I have done my best in official quarters to have it given fair play, but have failed, and I would now address myself to the public to ask them to help themselves. Here is what is done in Glasgow, and what should be done in London. The medical officer of health in that city takes every means to inform himself of the occurrence of small-pox cases. The moment information is received the locality is thoroughly inspected. Every case that cannot be treated at home without danger to the neighbourhood is removed, vaccinating officers are instantly despatched to the spot, and every person who has been exposed to infection, and who will allow it, is at once re-vaccinated. In one case, of which I have a report before me, for example, a death from small-pox occurred in a building inhabited by sixty-six families. The disease had been concealed, and the nature of it was not known till after death. Twenty-four cases of infection resulted. They were at once detected and removed, 152 persons were re-vaccinated, and the outbreak in the locality was stopped. Though London contains many zealous and energetic health officers, they are practically powerless to grapple with the disease. When an outbreak has occurred in the present epidemic they have been unable to procure the removal of the patient because the hospitals were full, and they have been unable to vaccinate the neighbours because they could not get lymph. I have asked the Local Government Board to supply lymph, but they refuse. What I now propose is that the public should supply it for themselves. My proposition is that a sum of money should be subscribed to supply lymph gratuitously to medical officers of health, and when they cannot undertake the work themselves, to provide them with the assistance

of a vaccinator to do what I have described as being so successfully done in Glasgow."

(10.) The tenth regulation states the inspector, subject to the directions of the Sanitary Authority, shall attend to the medical officer of health with respect to any measures which can be lawfully taken by an inspector of nuisances under the Public Health Act, for preventing the spread of any contagious, infectious or epidemic disease of a dangerous character. Reference to the Act shews that the powers concerning provision against infection are given solely to the local authority, except in the matter of causing premises to be cleansed and disinfected, when the certificate of their medical officer of health is required, or of any other legally qualified practitioner, that the said cleansing and disinfecting would tend to prevent or check the spread of disease. The inspector's duty is to attend to the carrying out of such directions as he may receive. In the interest of the public health it would be well, however, for him to collect and record all the particulars possible respecting any outbreak in his district. If this were done much service might be rendered towards an elucidation of the laws of these visitations. If we found that they generally originated in ill-ventilated, overcrowded, small-roomed houses, with yards, drains and privies in a foul condition, we should be justified in assuming these facts to be a sufficient cause for it; but if we found that an outbreak commenced in a clean, airy house, without an undue number of inhabitants, we should have to look to other conditions for the source of the evil. Bad water or unwholesome food, or careless preparation of it, might then, perhaps, be regarded with more suspicion, for without a microscope little is known of much that is consumed. Besides seeing to the cleansing and disinfecting of houses, he may be directed to superintend either the disinfection or the destruction

of bedding and clothing, the conveyance of infected persons to a hospital or other place of destination, either from houses or ships, also to see to the disinfection of any public conveyances that have been used by infected persons; and the Local Government Board has power to alter or revoke regulations on special occasions, and any one wilfully neglecting or refusing to obey or carry out or obstruct the execution of any regulation made under Section 130 of the Public Health Act, 1875, is liable to a penalty not exceeding fifty pounds.

(11.) The eleventh regulation requires the inspector to enter in a book, from day to day, particulars of his inspections and of the action taken by him in the execution of his duties. He shall also keep a book or books, to be provided by the Sanitary Authority, so arranged as to form, as far as possible, a continuous record of the sanitary condition of each of the premises in respect of which any action has been taken under the Public Health Act, 1875, and shall keep any other systematic records that the Sanitary Authority may require. To assist in carrying out these requirements the following books will be needed:— A nuisance inspection book divided into columns stating date of inspection, place, name of occupier, name of landlord, description of nuisance, directions given by the Authority, action taken, and result obtained; books containing printed forms of notices (for serving notices) with counterfoils. An account book for petty cash. (Some auditors prefer the authorities to draw cheques for the payment of every small account in preference to the petty cash system.)

(12.) The twelfth regulation sets forth that the inspector shall produce his books whenever required to do so by the medical officer, at all reasonable times, and give him such information as he may be able to furnish with respect to any matter to which the duties

of inspectors of nuisances relate. This does away with a necessity there would otherwise be for a second set of books to be kept by the medical officer relating to these matters. The periodical reports required from the medical officer is usually a retrospection, and the inspector's books enable him to make this very faithful and precise.

(13.) The thirteenth regulation states: "He shall, if directed by the Sanitary Authority to do so, superintend and see to the due execution of all works which may be undertaken under their direction for the suppression or removal of nuisances within the district." It is this rule that calls for a considerable knowledge of construction on the part of an inspector. The permission to the inspector to be also surveyor points, too, to the probability that an acquaintance with the building trades is deemed a desirability. With the view of being of practical use, the next chapter will contain such information as to modes of construction and nature of materials as the superintendence of sanitary works renders necessary. Without encroaching on the province of the surveyor, the inspector will find himself more able to surmount many difficulties of daily occurrence if he be familiar with the best modes of laying drains and sewers; paving of yards and alleys; with the best manner of spouting (much of the dampness of country cottages is due to the absence or insufficiency of spouting); the rival merits of earth and water closets, and of all fittings; with some mechanical contrivances for scavenging and cleansing; the best systems of water supply; the internal arrangement of the most approved slaughter-houses; the use of stoothing as a remedy for damp walls; the use of a damp course in house building as a preventive measure; the nature and value of various disinfectants; and the laws of ventilation. The advantages of the application of sewage

to land as a manure, instead of its more wasteful disposal by conducting it into rivers, is a matter for the surveyor's department, but should the inspector not be, also, the surveyor, he would find information on this subject of occasional use in the superintendence of village sanitary affairs, at all events in so far as it would prevent blunders.

(14.) The last regulation under the General Order simply states that in matters not specifically provided for in this Order, he shall observe and execute all the lawful orders and directions of the Sanitary Authority, and the Orders of the Local Government Board which may be hereafter issued, applicable to his office.

On reviewing the general tenour of these definitions of his duties, it will be seen the inspector is to look upon his district as an estate to be kept in order. He is to ascertain all blemishes in the shape of nuisances, either by inspection or by examination after receiving information of their existence, and get them abolished or abated. He is to preserve all public works designed for the public health from injury and filth. He is to keep a watchful eye over the provisions brought into the district or offered for sale in it, lest the consumption of unfit food should cause disease. He is to call the medical officer's immediate attention to the occurrence of epidemics or infectious illness. He is to assist in preventing the increase of the same when directed. He is to keep an account of everything that occurs relating to his duties, and, when required, shew these accounts to the medical officer of health acting with him. And he is to superintend the execution of any sanitary works undertaken by his Authority if required to do so. In a few words, he is the custodian of the public health, and of works intended to promote the public health; and is to provide his district, so far as he can, with pure air,

pure water, and wholesome food. Where his own knowledge of disease, and the probable cause of it, runs short, he has the medical officer to give him counsel ; and when his own powers are not sufficient for the abatement or abolishment of conditions that he is certain are antagonistic to health, he has the first succeeding meeting of his Authority to look forward to for extra assistance and special instructions. Meanwhile he is always acquiring useful experience, and helping by his own records to add to the data upon which a more satisfactory knowledge of the laws of health may be based than we now possess.

The inspector will find it to his advantage to examine the annual reports of the Local Government Board presented to both Houses of Parliament by command by Her Majesty. Some of the best suggestions of the best minds will be found in them.

CHAPTER IV.

SEWERAGE AND DRAINAGE.

THE first sanitary provision in the Public Health Act, 1875, relates to Sewerage and Drainage.

As there is sometimes a confusion of terms in these matters, it may be as well to note that sewerage is the system of pipes by which a district is relieved of its sewage: sewage is the fluid and solid matter removed in these sewers. Drains are pipes used for the drainage of one building, or set of premises only, for the purpose of conveying its sewage to the cesspool, or into a sewer into which the drainage from two or more buildings is conveyed, or into the main sewer.

Probably there are but few urban districts still without some system of sewerage, either good, bad, or indifferent; but there are numerous rural districts that have none whatever; and also many that have only the provision of an open channel running through the village. Previous to the year 1815, sewers were only intended for surface-waters. It was illegal to drain into them the matter collected in cesspools. Now, they are intended to receive surface drainage, subsoil drainage, and drainage from water-closets and sinks; and all are under the control of the Local Authority of the district to which they belong; unless the special property of those who have constructed them.

Sewers are now generally made either of earthenware, fire-clay, or iron pipes, brick, or concrete. Tiles, cement, and artificial stone, have been used, and timber is sometimes required for casing and other protection. The jointing of pipe sewers is a matter of much

importance, for if not sound a leakage takes place that soaks into the surrounding soil and renders it insalubrious. When cement is used for the purpose, it sometimes gets into the interior of the pipe in such proportions as to cause a stoppage, without proper care. For this reason, Mr. Baldwin Latham recommends the use of gaskin. The best mode of jointing socket-pipes, under all circumstances, "consists in forcing into the socket of every pipe several strands of tarred gaskin, of sufficient diameter to fit the socket tightly. It should be forced into the socket by hand, with a proper caulking tool, and afterwards the joint may be made with clay or cement in the usual way."

The Act requires, Sections 15 and 19, that all sewers constructed by Local Authorities should be kept in repair by them, and covered and ventilated, as well as kept cleansed and emptied, so as not to be injurious to health. To meet these requirements, man-holes, lamp-holes, flushing arrangements, penstocks, storm overflows, tidal or outlet valves, or flaps, an intercepting system, pumping engines, lifting gear, ventilating arrangements, siphons, and many other sewerage fittings, may be required, when, if the necessary work of supervision be not placed in the hands of the surveyor, the inspector would do well to consult the useful work entitled 'Sewerage, Drainage, and Water Supply,' by Robert Rawlinson, C.B., for any special information on these subjects.

The experiments of various towns as to modes of purification of sewage by filtration and precipitation, for use on land, are an important study apart, to which attention should be given if sewerage works be contemplated.

There are many inventions, patented or otherwise, bearing on this subject, constantly appearing both in Europe and America. A description of sanitary pottery, terracotta, faience, and sanitary appliances,

would fill a portly volume. The illustrated catalogues which the manufacturers issue will supply all the information required by the inspector. The best advice, therefore, is to suggest an examination of the advertising columns of the *Builder*, or other building trade periodical, for the names of manufacturers, and then a request for an illustrated catalogue to those selected as likely to furnish the requisite kinds of appliances. Every kind of curve that a drain-pipe can take is to be had ready manufactured. Some of these bends are furnished with inspection apertures, which can be closed over with a cap set in mortar at a price only about double that of an ordinary bend. The use of these bends should be always insisted upon, instead of the common practice of knocking a hole in one pipe, and placing the head of another in it. Some of the straight drain-pipes are furnished with means for inspection, too, in the shape of a lid or cap, so that in a line of drain it is easy, by the adoption of these caps here and there, to remove obstructions either by hand or by rod. The Blaydon gulley, to receive the discharge from drains in the open air, is an admirable contrivance. It should always have a hinged grating, as the gratings are apt to be carried away and lost otherwise. The inspector should always bear in mind that there should be no direct communication of the drains with the interior of any house, except the properly trapped and ventilated soil-pipe from water-closets. All the other waste pipes should discharge in the open air into gullies.

There is a growing belief that consumption and diphtheria are much more frequently co-existent with undrained soil or retentive soils than others. Hence the importance that sub-drainage should be well considered in all sewerage schemes, lest an opportunity be lost for reducing the amount of these scourges.

For the ordinary sewerage of an ordinary village

having no particular difficulties arising either from levels or geological formation, and where there is already an outlet in use, a simple specification of the following kind might be sufficient, to accompany a plan, for contractors to tender from :—

SPECIFICATION

Of Works to be executed in laying down a New Main Sewer in the village of A.

Dig a trench 2 feet 6 inches deep, and lay 6-inch glazed vitrified socketed pipes, commencing at the highest point in the village, marked on the plan, and continued down to the outlet at the lowest.

Six-inch junction pipes are to be laid on to provide for all the private junctions, which said private junctions are to be done at the expense and order of the proprietors.

In every case junctions that cross the water main are to be laid in socketed pipes *under* the water main.

Care is to be taken in digging the trench and laying the new pipes by the side of any existing storm cundies that the walls of the said cundies may not be weakened or loosened in any way.

The pipes are to be socketed in clay puddle, and laid with such fall as may be directed.

Fill in and ram, and make good to road surface after completion.

Provide and fix a 1-ft. 6-in. metal stockton gulley grate and trap, set in stone curb, at each of the public pumps or pants. Lay a branch from each of the said pumps or pants joined to the main sewer.

The whole of the work is to be done with the best materials and labour, and to be proceeded with in such manner and at such times as the inspector may direct.

The contractor is to provide all materials, labour, and cartage. The contractor is to protect the trenches and works as they proceed, and to be answerable throughout for any injury that may occur to human beings or animals during the progress of the works.

The work is to be delivered up to the Authority complete and in perfect order (by date specified, if required).

Payment will be made at the rate of 80 per cent. of the contract sum, one month after completion, and the balance two months after the completion.

The contractor is to agree to maintain the works in perfect working order for three months after completion.

Here is a specification for the laying down of a main sewer in a village where only a short length of tile sewer with an outlet in a distant ditch had previously existed :—

SPECIFICATION

Of Works to be executed in laying down a Main Sewer in the village of H., for the Rural Sanitary Authority of A. Union.

F. R. W., Sanitary Inspector.

August 1881.

SEWER CONTRACTOR—

Old Sewer.—Take up the tile sewer as far as it exists in the main street of the village. The tiles so taken up to be the property of the contractor.

New 6-inch Sewer.—Excavate for, provide and lay down a six-inch glazed vitrified earthenware full-socketed pipe sewer from a point A ten yards west of the westernmost cottage with a fall to the point B, and from the point C, which is at the crown or rise and fall of the road there east of the village, down to the point B. The new pipe sewer is to have proper bends at the chamber, point of junction B, and carried forward and properly and efficiently joined to the existing outfall sewer at or about this point.

Junction Pipes.—No. 6 junction pipes (6 to 6 inches) to be provided and laid down at the time of laying the sewer, at such points as the inspector shall direct, and the ends stopped with slate or stone until private junctions are made thereto. Take up and relay so much of the existing outlet sewer from the point B, southwards, as may be required to get level.

Inspection and ventilating Chambers.—Dig for trenches for the main sewer.

Dig for inspection and ventilating chambers No. 3, excavate or quarry as the case may be. Cart away all excavation and refuse.

Carefully fill in and ram.

Cover the pipes with large stones at farm-building gateways.

Risks.—The contractor is to take all risks of labour required in excavating, whether soil, rock, or otherwise.

Road Metal.—Take up the road metal where required and properly relay after.

Method of laying the Pipes.—The pipes are to be laid truly on a bed of clay with even gradients. The spigot end of the pipe to be laid down hill and to be laid not less than 2 feet 9 inches from the surface. The pipes are to be jointed in cement. Special care must be taken to see the cement does not get into the interior of the pipe.

Every pipe to be pointed as it is laid down, and no fresh pipe laid in position until it has been ascertained that no cement has passed through the joint of the previously laid pipe.

Inspection and ventilating Chambers.—Build No. 3 inspection and ventilating chambers, according to the detailed plans, at the points A, B, and C. The stone covers to be scored on the surface and to have two holes for passing iron hook through to lift up.

Provide No. 2 strong iron hooks to lift covers.

All Things.—Provide all stone, bricks, lime, sand, water, cement, labour, ironwork, materials, cartage, and all things.

GENERAL CONDITIONS.

As soon as the tender is accepted the contractor is to sign the plans, specification, and these conditions, and proceed with the work.

Two months' time will be allowed for executing the works.

The contractor is to take the risks, and be answerable for all injury to persons or animals while the works are proceeding, and is, if necessary, to protect and watch the trenches and works day and night.

The contractor is to maintain the works in perfect working order for three months after completion at his expense.

The contractor is to take his own measurements before tendering along the line for the sewer.

If required by the Authority the contractor is to enter into a legal agreement for the full and satisfactory completion of the contract.

The contractor is within three months after completion, or when required by the inspector, to level up and make good subsidence of trenches and road surfaces along the line of the new sewer to the satisfaction of the surveyor of highways.

The works are to be done to the satisfaction of the inspector, who shall have power to reject all materials and labour that he may consider deficient, and the contractor shall reinstate with new at his sole cost.

The inspector shall have power to order any addition or deduction that he may deem necessary from the nature of the works as they proceed, and the cost of such addition or deduction shall be assessed by him.

All disputes to be referred to the inspector, whose decision shall be final and binding on all concerned.

Payments will be made on the certificate of the inspector at the rate of 85 per cent. on the amount of work done, 15 per cent. to be held by the Authority in reserve six weeks after completion.

In the writer's experience farm-houses and farm-buildings have been treated in this manner:—the drains from each set of buildings have been conducted into one sewer, which sewer has conveyed all the sewage to three trenches cut into the earth at a low part of a neighbouring field. When one trench is filled, the sewage is turned into the next, and when this second one is filled it is turned into the third; and by the time the third is filled the contents of the first one have settled, and the deposit is fit for use on the land, and the trench, when emptied, ready to take its turn again at being filled.

The following specification contains clauses that may be required when the sewer in contemplation is

only an extension or branch to one already in existence, that is called for by new streets. With trifling alterations, to suit a different plan and circumstances, it may be found useful.

SPECIFICATION

Of Works to be executed in laying down a New Sewer, forming the upper part of the Southern Branch of the North-western level Main Sewer at B., for the Rural Sanitary Authority of C. Union.

F. R. W., Sanitary Inspector.

July 1881.

MASON, OR SEWER CONTRACTOR—

Cut off the junctions of Mr. D.'s drain and make temporary junctions good into old cundy until the new sewer is laid. Make good junctions to the new sewer for Mr. D.'s drains.

Take up the pebble pavement of the roadway from the point A to B shown on the plan. Take up the sinks and traps C C C. Take up the drain pipes laid down by Mr. D. from end to end.

Take up the stone cundy from end to end.

Great care is to be taken not to disturb or in any way injure the gas pipes, water pipes, side pavements, and the pebble pavements against the houses marked S on the plan. All and every damage made to these pipes and pavements shall be repaired and made good by and at the cost of the contractor for these works.

Take up all junctions or other drains and materials and things required to be taken up to lay the new sewer pipes with their junction pipes complete.

All the materials and things described as above to be taken up are to be the property of the contractor.

Provide and lay down 9-inch glazed vitrified earthenware socketed pipes from the points T T to the existing receiving tank W, with junction pipes (6-inch to 9 inches) at the various points shown on the plan, with all requisite bends.

Dig the trenches, excavate, and cart away all excavations and refuse. Carefully fill in and ram. From the points T T to U the pipes are to be laid truly on a bed of clay, with even gradients not less than 8-inches to a chain and according to the section. The spigot end of the pipe to be laid down hill.

The pipes are to be jointed with clay. A tool is to be used for pressing the clay into the socket. After forcing the clay into the socket a fillet of clay is to be worked round it to complete the joint.

From the points U to W the pipes are to be laid on a bed of concrete and the trenches filled in up to 6 inches of the surface with a solid bed of concrete.

On account of the narrowness of the passage Y and the nearness of the adjacent foundations to the surface, the greatest possible care is to be taken in forming the trenches, laying the sewer and filling in,

This part of the work is to be executed and completed in lengths of not more than 9 feet at a time.

The sides of the trench are to be protected as the work proceeds by poling boards $1\frac{1}{2}$ inch in thickness, close together, with horizontal walings or planks 11 inches by 3 inches, kept in position by struts 4 feet apart, according to the detailed section. The timbers to be wedged and nailed with 5-inch spike nails. The lower timberings and so much of the upper ones as the inspector shall deem advisable as the works proceed, shall be left in position in the trenches. The timber used is to be Memel fir.

The concrete is to be a mixture of one part Portland cement, two parts sand (no sea sand will be allowed), and three parts of stones broken (or shingle) so as to pass through a $1\frac{1}{2}$ inch sieve, turned over on a proper mixing platform, thrown in from a stage and used fresh in the work.

The sewer is to be carefully laid throughout this length with a fall of not less than 10 inches to a chain. Clay may be used to bed or level up.

The joints of the pipes from U to W are to be laid in cement. Special care must be exercised to see that the cement does not get into the interior of the pipe. Every pipe is to be jointed as it is laid, and no fresh pipe laid in position until it has been ascertained that no cement has passed through the joint of the previously laid pipe.

Carefully shore up and support the parapet wall and railing X, and make good after the sewer is laid.

Provide all shoring required to walls of concrete houses.

Build No. 2 lamp-holes at Z Z (see plan and detailed sections).

Build a flushing chamber where shown on the plan. To be 2 ft. 6 in. wide, 3 ft. long, and 2 ft. 6 in. high in the clear. The walls to be strong rubble, 1 ft. 6 in. thick, properly bonded and founded and cemented. Cut groove for and provide and fix a $\frac{3}{4}$ wrought-iron plate flush door with handle to lift up. Covers not less than 9 inches thick to be laid on the top, and a square stone with strong sunk iron ring let in to lift off. Provide and lay 1-inch galvanized iron water-pipe forward into the top of this tank with 1-inch brass cock.

Relay the pebble pavement from A to B with a pebble channel from C to D. Provide additional pebbles required of a large kind and the best and strongest to be laid in the wheel tracks. The whole to be bedded in sand and engine ashes rammed in.

Provide and fix No. 4 Blaydon gully sinks and traps at E E E E set in strong stone curbs, which are to be channelled for surface waters.

Provide broken stones, bricks, or soil for levelling up after the cundy and other things are removed.

GENERAL CONDITIONS.

These works are to be executed in a workmanlike manner with the best materials of their several kinds and delivered up to the Authority complete in every respect.

The contractor is to be responsible for all damages occurring to buildings or properties in the course of the execution of these works.

If required by the Authority he is to enter into a legal contract providing two sureties in one hundred pounds each for the full, complete, and satisfactory completion of the works.

The works are to be done to the satisfaction of the inspector, who shall have power to reject all materials and labour that he may consider deficient, and the contractor shall reinstate with new at his sole cost.

The plans show to scale the length and courses of the new sewers, &c., as near as may be. It is to be understood, nevertheless, that the contractor will measure for himself on the site before tendering the exact length of sewers required, viz., from the points T T at the eastern end to the existing receiving chamber W at the western end.

On the acceptance of his tender, the contractor is to sign the contract, and the plans, specifications, and these conditions from which he tendered.

The works are to be commenced within two weeks after signing, and to be gone on with and completed in one month from the date of commencement. This period will be strictly adhered to in order that the inhabitants may not be prevented getting their coals and other things by carts not being able to come along.

The works are to be commenced at the outlet end W and carried forward upwards.

The inspector shall have power to order any additions or deductions that he may deem necessary from the nature of the works as they proceed, and the cost of such additions or deductions shall be assessed by him.

Payments will be made on the certificate of the inspector. Twenty per cent. of the contract sum is to be held by the Authority in reserve six weeks after completion, during which time the contractor shall maintain the works or repair, if necessary, any defective portions.

The drains of any new building are recommended, summarily, in some local bye-laws, to be constructed of glazed stone-ware or fire-clay pipes; to be of adequate size; to be laid with water-tight joints; to have a proper fall, and to be connected with the sewers in such a manner as the Authority shall direct; not to be laid beneath any building unless unavoidable, and then to be imbedded in and surrounded by a sufficient thickness of concrete. Proper ventilation is to be provided by special pipe, or shaft, or by some other effectual method. The waste pipes from sinks, baths, lavatories, the overflow pipes from cisterns, and all pipes for carrying off waste waters, are to be taken through an external wall, and to discharge in the open

air over a channel leading to a trapped gully grating at a suitable distance. The inlets to all drains to be properly trapped. The soil-pipe from all water-closets to be fixed outside such buildings, and to be carried upwards its full diameter to such a height as will cause its open end to be a safe outlet for sewer gas. When waterworks have been executed from the instructions of the most accomplished engineers, the inspector should bear in mind that the most grievous results may ensue all the same, if he should neglect a systematic flushing and inspection of the mains and branches. This is a duty that is too frequently lost sight of.

He should also examine soil-pan arrangements, and ascertain when they are supplied direct from the main, and cause the communication to be severed. If a service box on the water waste preventive principle is not in use, the soil-pan should be flushed by hand. There are thousands in the poor quarters of London so flushed. There is a patent ventilating cowl and trap, the latter for the basement and the former for fixing on the soil-pipe when carried above the roof, that appears likely to be useful in many cases.

For the fullest information of the requirements of the Local Government Board, when sanction is asked for a loan for the execution of works, the best plan is to carefully consult the suggestions prepared by their chief engineer, which are subjoined :—

SUGGESTIONS AS TO THE PREPARATION OF DISTRICT MAPS, AND OF PLANS FOR MAIN SEWERAGE AND DRAINAGE AND WATER SUPPLY.

Repeated applications having been made to the Local Government Board for information relative to Plans to be submitted to them when their sanction is required for loans, and other purposes of the Sanitary Acts, as well as for information as to the principles to be kept in view in framing plans for works of Main Sewerage and Water Supply, it has been found advisable to issue the following Suggestions.

Boundary Map.

In cases in which a Local Government District or a special Drainage District is proposed to be formed, a map should be submitted, accompanied by a written description of the proposed boundary clearly defined. The description of the boundary should be clear, unmistakable, and as short as is consistent with accuracy. The name of the proposed district should be shown on the map, with the area in acres. The population and the number of houses, with the rate of increase as ascertained at the two last decennial periods upon which the census was taken, and a duplicate of the map, on tracing cloth, should be furnished.

Map for Division into Wards.

Division into wards is for the purpose of election of members to serve on the Local Board.

A map of the entire district must be submitted, with the main boundary distinctly defined, and the name of the district shown thereon.

The proposed division into wards must be by lines, clearly defined on the map of the district; brooks, roads, footwalks, streets, fences, or other easily recognisable lines of division of a permanent character may be adopted.

Define such lines on the map by a margin of colour.

Describe the proposed boundary lines in writing.

State on the map the name or number of each ward.

Give the relative areas, population, and rateable value of each ward.

State the number of members proposed to be elected for each ward.

A duplicate map, on tracing cloth, must be provided by applicants in each case, such tracing to remain with this office for future reference.

Plans of Proposed Works.

It will in all cases be necessary, upon application being made for sanction to a loan for the execution of works, that plans, sections, detailed estimates, and specifications (or tracings of the plans) be submitted with the application, accompanied by information as to area in

acres, population, the number of houses, and the rateable value of the district at the two last periods of the taking of the census.

Such plans (if published) may be used for showing lines of main-sewers, drains, water-pipes, and gas-mains. The lines of main-sewers and drains should have the cross-sectional dimensions of the sewers and their gradients distinctly marked (written and figured) upon them. The dimensions of water and gas pipes should also be shown in figures or by writing. (See the specimen Plans 1 and 2.)

N.B.—No general map should be submitted which is drawn to a scale less than six inches to a mile, except when the inch Ordnance Map is used.

Maps upon which sewerage-works or water-works are to be shown, or for street improvements, should be upon the Ordnance scale of $\frac{1}{2500}$ th. (See Drawing No. 1.)

Sections shall be drawn to the same horizontal scale, and to a vertical scale of twenty feet to the inch.

Detailed Plans.

Any new detailed plan for the purposes of house-drainage, paving, the purchase of land, &c., should be constructed to a scale of not less than *ten feet to a mile*, and upon this plan should be exhibited all houses and other buildings, bench marks, the levels of streets and roads, of cellars, of the sea at high and low tide level, and the summer and flood levels of rivers. Three feet by two feet will be a convenient size for the sheets of this plan. (See specimen Plans No. 2.)

Enlarged detailed plans and sections of sewers, manholes, sewer-sluiques, sluice-valves, water-pipe joints, and similar details, should not be to a scale less than eight feet to one inch; and for some details, four feet to one inch. (See Drawing No. 3.)

As it may occasionally be desired to carry out works piecemeal, with a view to save the time which would be occupied in the preparation of a complete plan from actual survey, it will be sufficient, in the first instance, to furnish any available general plan of streets and roads, with the surface levels and those of the deepest cellars, figured in feet and inches, and the proposed scheme of works shown (or sketched) thereon, after which the works can proceed in sections. It should be understood, however, that a complete plan of the entire district must be proceeded with, so that when the works are finished the Sanitary Authority and this Board may possess a proper record of the works.

Main Sewerage and Drainage.

SUGGESTIONS.

With a view to convey, in a convenient form, knowledge which has been gathered by experience in sanitary works, the following synoptical information has been drawn up as being worthy the consideration of local surveyors and others who may be engaged upon such works.

N.B.—Ordnance Maps (the 1:50,000 scale) may be used for districts and for sewage farms, the districts and farms being properly defined and coloured.

Before a scheme of sewerage is devised, the district should be fully examined, so as to obtain a correct idea of the drainage-area, or the several drainage-areas; inquiry should then be made to ascertain how surface-water has passed off up to the time of such examination, and with what effects. Main-sewers and drains should be adapted to the town area, length of streets, number of houses, surface-area of house-yards and roofs, number of street-gullies, and volume of water-supply.

Sewers and drains should, when practicable, be made to act as land-drains.

Exceptionally wet subsoils may, however, require special drainage, as where the sewerage may require to be pumped either for clarification or for sewage irrigation.

The following rules are general; each surveyor must, however, use his own judgment, and make the best arrangements possible, having regard to the circumstances of each special area, and the materials at command :—

1. Natural streams should not be arched over to form main sewers; because a natural stream may drain an area very much larger than the area built over, and consequently a culvert (or sewer) of capacity to remove flood waters in a wet season would be comparatively dry during a dry season, and any sewage then flowing in would stagnate and evaporate, causing nuisance.
2. Valley lines, natural streams, and surface areas may be improved, so as to remove more readily surface water and extreme falls of rain—that is to say, streams filled up by accumulations of refuse may be cleansed and deepened, and areas liable to be flooded may be raised or be protected by embankments.
3. Main sewers need not be of capacity to contain flood-water of the area drained, as such flood-water should be passed over the surface.
4. Main-sewers should be laid out in straight lines and true gradients, from point to point, with side-entrances, or with manholes, and flushing and ventilating arrangements at each principal change of line and gradient. (See Plates Nos. 1 and 2.) All manholes should be brought up to the surface of the road or street to allow of inspection, and should be furnished with a cover easily removable. (See Plate No. 3.) When sewers are laid out in “straight lines,” and the surveyor insists upon absolute truth of workmanship both in line and in gradient, the work will necessarily be well done. With manholes and lampholes at each change of line or of gradient, the surveyor, by removing the covers, can at any time set out the central line of the sewer upon the surface, and can ascertain the depth from the surface to the sewer at any intermediate point, and so find the exact position of any side-junction.
5. Duplicate systems of sewers are not required. Existing road-

drains and drains to natural streams in valley lines may be retained for storm waters, and may be improved or, if necessary, enlarged. Two sets of main sewers with two sets of house-drains will be costly to construct, and, if constructed, will often lead to complications tending to defeat the proposed uses. The so-called clean-water sewer cannot, in many cases, be large enough to receive storm-water, and in dry weather it would of course be dry. The sewer proper would be without the flushing and cleansing given during falls of rain, and the washings off land, ditches, roads, roofs, yards, and gutters during the first falls of heavy rain, would, in many cases, be as polluted as the sewage in the true sewer. Supposing two sewers in a street, and two sets of drains from each house on each side of such street, the drains must interlace the duplicated sewers, the foul water drain communicating with one, the surface water drain with the other. Under such circumstances, it would be almost impossible to prevent builders and workmen from entering the sewers with their drains indiscriminately. Moreover, if the duplicate sewers were not absolutely water-tight, and the subsoil also water-tight, the fluid in one sewer would, by filtration and percolation, act and react upon the other sewer.

6. Earthenware pipes make good sewers and drains up to their capacity. The pipes must, however, be truly laid and securely jointed. In ordinary ground they may be jointed with clay. In sandy ground special means must be used, such as by bedding the joints in concrete. House-drains should, in all cases, be laid in concrete. If the subsoil is porous the trench should be lined with clay-puddle. Special care should be taken to prevent any contamination of wells by sewage when the water from the wells is to be used for domestic purposes. Earthenware pipes are rarely true in form, as the clay shrinks and becomes distorted in drying and burning. They should, therefore, be sorted for use so as to form one even line, and in laying the joint should not bear in the socket in such manner as to be liable to fracture, but the pipes should bed evenly and solidly in the trench, the sockets being free from pressure, a grip, or small trench, being cut to receive the clay, or the concrete, upon which the joint is to be made.*
7. Brick sewers ought to be formed with bricks moulded to the radii. (See Plate No. 4.)
8. Brick sewers should, in all cases, be set in "hydraulic mortar" or in cement. In no case should any sewer be formed with bricks set dry, to be subsequently grouted. Where half-brick arches are used the top of such arch should be covered with concrete

* Sanitary sewer-pipes, if more than eighteen inches in diameter, will be heavy to handle and difficult to joint, and may cost more than a brick sewer of similar dimensions set in cement and concrete, and not make such sound work.

not less than three inches in depth, and made level over the top of the arch. Half-brick sewer arches are liable to damage if they are not protected by concrete, as a blow or undue pressure on any part or any joint may force a brick out of place; a covering or bedding of concrete will tend to prevent this form of damage and failure. (See Plate No. 4.)

9. Main sewers may have flood-water overflows wherever practicable, to prevent such sewers being choked during thunder-storms or heavy rains. An overflow, to be of most use, should permit the sewer to be flowing full, and it should be so situated, formed, and protected, as to relieve the sewer by an opening formed like a bye-wash.
10. Sewers should not join at right angles. Tributary sewers should deliver sewage in the direction of the mainflow.
11. Sewers and drains, at junctions and curves, should have extra fall to compensate for friction.
12. Sewers of unequal sectional diameters should not join with level inverts, but the lesser, or tributary sewer, should have a fall into the main at least equal to the difference in the sectional diameter. The junctions of sewers and drains should be made with care, so as to permit of the delivery of sewage from side-sewers and drains in such a manner as shall not tend to impede the sewage of the main sewer in its flow. If the inverts of tributary sewers are not above, or, at the least, are not on the level of the ordinary flow of sewage in the main sewer, such tributary sewers or drains will be liable to be back-watered, in which case deposit will take place in the length of submerged invert, and so the tributary sewer or drain will become choked with its own silt. Many drains are so choked, where all the inverts in a flat district join upon the same level, because the sewage of the main sewer, which is in some degree constant, back-waters the inverts of the tributaries as described, which tributaries are only used intermittently.
13. Earthenware pipes of equal diameters should not be laid as branches or tributaries—that is, 9 in. leading into 9 in., or 6 in. into 6 in., but a lesser pipe should be joined on to the greater, as 12 in. to 15 in., 9 in. to 12 in., 6 in. to 9 in., and so on.
14. House-drains should not pass direct from sewers to the inside of houses, but all drains should end at an outside wall. House-drains, sink-pipes, and soil-pipes should have ample means of external ventilation. In towns where houses have to be drained from back to front through the basement the drain-pipes should have an effectual joint, and be bedded and covered in concrete, such drains being ventilated, back and front, on the outside of the house.
15. Sinks and water-closets should be against external walls, so that the refuse-water, or soil, may be discharged into a ventilated trap, and drain outside the main wall. Down-spouts may be

used for ventilation, care being taken that the head of such spout is not near a window. Water-closets or sinks fixed within houses, and having no means of direct daylight and external air ventilation, are liable to become nuisances, and may be injurious to health; and if such sinks and water-closets cannot be ventilated in an efficient manner, they had better be removed.

16. Inlets to all pipe-drains should be properly protected—that is, no pipe-drain should have its upper end exposed so as to admit sticks, stones, or other solid materials being accidentally or mischievously passed in.
17. Side-junctions for house-drains should be provided in all new sewers and drains. The position should be sketched, and indicated by figures in a book or on a plan. Side-junctions not used at once should be carefully closed for subsequent use. If side-junctions are not provided and put in as the sewers are being constructed or laid, the cost of subsequent provision and insertion will be much greater. It will be cheaper to insert extra side-junctions during the construction rather than to have pipes to remove or brick sewers to cut after the trenches have been filled in and become consolidated, and the road or street surfaces made good. (See Drawing No. 3.)
18. A record should be kept by the surveyor of the character of the subsoil opened out in each street as it is being sewered or drained. A sketch-book may be used for the purpose, a section being drawn on a page to show the character and variety of the subsoil as excavated in each street or road, the depths of the various layers, as of sand, gravel, clay, rock, or other material, being described in writing and also figured in the diagram; these books to be indexed and preserved with the plans for subsequent reference and use.
19. Sewers and drains should be set out true in line and in gradient. All the materials used should be sound, and the workmanship should be carefully attended to. Surveyors who have had little practical experience in sewer construction do not at once perceive the necessity for straight lines, true gradients with manholes, or lampholes at the changes of line or gradient; the reasons will, however, become obvious when the works have been completed, as the surveyor will find that truth of line and of gradient can only be obtained by a use of good material and the best of workmanship; the sewer-trench must have been excavated carefully and must have been shored properly and strongly; the trench must also have been filled in carefully. The manholes and lampholes afford means for ready inspection, as also for flushing and cleansing; and, as previously stated, the line of the sewer can be readily and accurately indicated upon the surface of the street or road, and the exact position and depth of every side-junction be found. In main streets having much traffic “side entrances” may

- have to be used instead of manholes. Each manhole may be a "*flushing chamber*," and each manhole and lamphole may also be a sewer ventilator. Sewers and drains which have been set out and constructed true in line and in gradient are, for all subsequent time, under the ready inspection of the local surveyor.
20. "Sight-rails" should be put up in each street before the ground is opened out, showing the centre line of each sewer and depth to the invert. The proper use of sight-rails in sewer and drain construction, when put up by the surveyor, will enable the foreman to set out and excavate the trench truly; these sight-rails should be strong, and should also be securely fixed on firm ground—that is, beyond the influence of the excavation to be made, and if the substrata is peaty or such as will shrink under pumping to lower the subsoil water, care must be taken that the sight-rail or bench-mark to be worked to is in such position as to remain unaffected, or the result will be a crippled sewer—that is, the grade and line will not be true.
 21. Sewers having steep gradients should have full means for ventilation at the highest points.
 22. Tall chimneys may be used with advantage for sewer and drain ventilation, if the owners will allow a connection to be made.
 23. Sewer-outlet works should be simple in form, cheap in construction, and so arranged as to remove all solids, sediment, and flocculent matter from the sewage. Some diagrams of works of this character will be found at the end of these "Suggestions." (Drawings 7 and 8.)

General Remarks.

In executing town sewers and drains danger may be anticipated from several conditions; as, where a street or place is narrow, with buildings on both sides, and where the trench is deep; where the substrata is clay or marl, made ground, loose earth, bog and silt, quicksand, or any combination of such strata.

Quicksand is most difficult to deal with; and, as a rule, such ground should only be opened in short lengths. This ground may require to be close timbered, and in such case stable litter and ashes will be found useful to pack behind and betwixt the "polling-boards."

Sound-looking clay or marl may require careful timbering to prevent heavy breakings from the sides of the trench. When such ground "sets" heavily, the sewer, if of bricks, may be seriously injured: if of earthenware pipes, these may be ruined by cracking or by crushing and distorting the line of sewer or drain-pipes.

As a rule, all sewer and drain-trenches in towns should be carefully timbered, and when the ground is loose such timbering must either be left in or be most carefully removed as the trench is filled.

The houses and buildings in narrow streets may require to be propped and stayed; if so, such props and stays ought not to be removed until the sewer or drain has been completed, and the ground become perfectly consolidated.

In many cases it will be cheaper, because safer, to leave timbering in deep trenches, and where there is special danger the trench should be filled with concrete.

A foreman in charge of sewer-works is expected to be on the watch to see that the men execute the works safely. The local surveyor must see that timber sufficient in quantity and in quality is supplied in time to secure all open trenches, as also the buildings on either side.

Where ground is known to be specially dangerous, all available precautions must be taken to prevent accidents.

It is of the utmost importance to impress upon local surveyors the necessity of care in setting out main-sewerage works and house-drains with accuracy, in choosing sound materials, and in properly superintending the works during their progress. House-drains should be so arranged as to be capable of removing all water, soil, and fluid refuse from yards, roofs, and interiors of houses to the sewers, without any risk of gaseous contamination to such houses.

Street-sewers should be capable of conveying all sewage to some common outlet without retaining sediment in them. All sewers and drains should have arrangements for full ventilation at such points and in such manner as not to cause any nuisance.

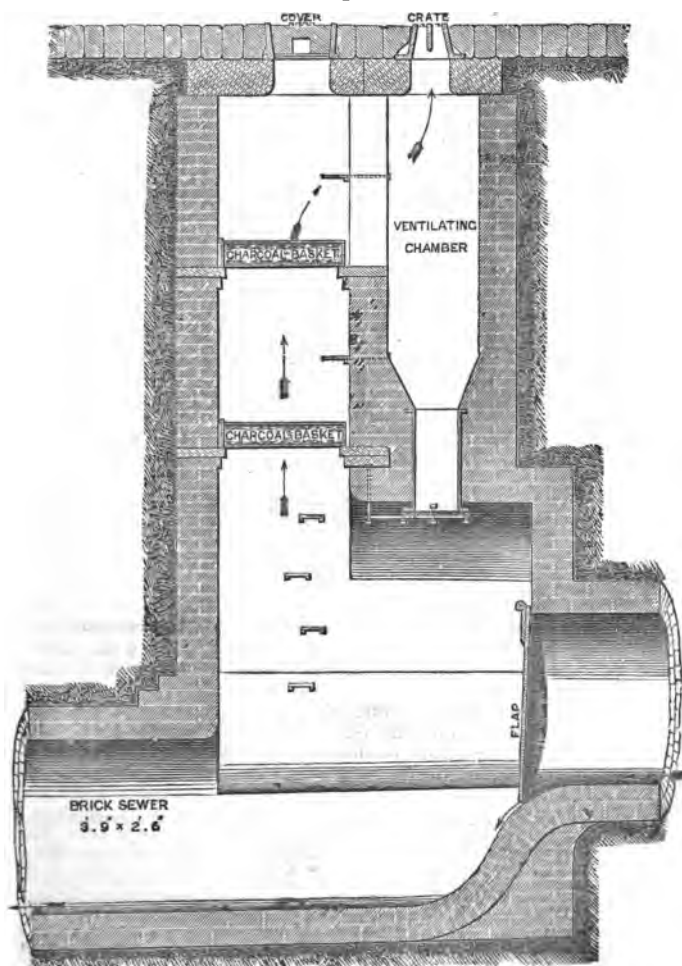
If the fluid-sewage can be applied to land for agricultural uses, means should be provided for effecting this purpose.

Water-closets should have a daylight window (not a "borrowed light"), and fixed means of ventilation, which cannot be tampered with. Permanent openings, equal to a slit 12 in. in length and 1 in. wide, should be provided. The cover, or lid of the seat, should be made to close and leave the valve handle free, so that the contents of the closet may be discharged with the lid closed down. At all times when a water-closet is not in use the lid or cover should be closed.

Manholes should have movable covers at the surface of the ground. There should be a side-chamber for ventilation, "step-irons" to give access to the invert, and a groove in the invert and sides to allow of a flushing-board being inserted at will for flushing purposes. The side-chamber should be arranged for a charcoal screen or filter.

Fig. 1 exhibits a system of ventilation of sewers which has been successfully brought into use. The figure shows the usual manhole or shaft with movable iron cover, made to prevent the passage of sewer air. Across the shaft are laid two or more movable charcoal filtering-screens, through which the sewer-gas, disinfected by the charcoal, passes into a side ventilating chamber, and thence through one or more open gratings into the street. The chamber is intended to receive any solid matter falling in from the street, which can be removed when necessary by a slide at the lower end of the chamber. In a hilly town the system of sewerage should not be so connected as to permit an accumulation of sewer-gases in the higher parts of the district. In such cases, the main sewer should be divided by steps or falls, with a flap-valve at the discharging end of the sewer, as shown in Fig. 1, to compel the gases to pass through the ventilating shaft, rather than to be allowed to traverse the entire line of sewer from the lowest levels to the summit levels.

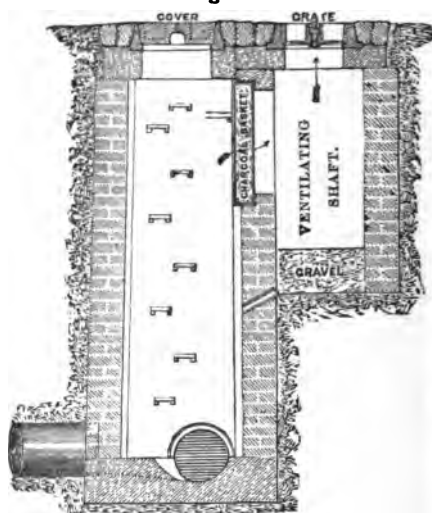
Fig. 1.



Manhole, Tumbling-Bay and Double Ventilating Arrangement.

The usual method of ventilating pipe-drains is shown in Fig. 2, where the charcoal screen is placed vertically between the manhole and the ventilating shaft.

Fig. 2.



Manhole and Ventilating Shaft.

Earthenware pipes of 4 in. in diameter are sufficient for water-closets and sinks; these may join drains of 6 in., the 6 in. joining 9 in., 12 in., and 15 in., and these forming a tributary main, or passing to a main sewer.*

It is frequently necessary to carry the outlet of a sewer from a sediment tank or sewage farm to a river having a low summer level. An iron pipe fixed at the bottom of the sewer with a slight dam in front of the junction will ensure the discharge of all the clarified sewage below

* The town of Alnwick, in Northumberland, stands on part of a natural drainage area of 2000 statute acres, with steep gradients. The population is about 7000. There is a water supply of 150,000 gallons per day, and some 1400 water-closets regularly in use. Common privies have been abolished. The outlet sewer is 18 inches in diameter, upwards of 2000 yards in length, having a fall of one (1) in 400. There are sewers of 15 inches, 12 inches, 9 inches, and 6 inches; all house-drains are 4 inches. These sewers are entirely of earthenware pipes, and have acted perfectly during 20 years. There have been falls of rain, tropical in character, causing great destruction at the surface, but the sewers were not injured, nor did anyone complain that sewers and drains of larger dimensions had not been provided. Alnwick Castle is completely sewered and drained by means of one outlet-sewer of earthenware pipe twelve (12) inches diameter.

the summer low-water level, while the brick sewer above will give free passage to the storm-water, and the flap-valve and manhole ventilation will prevent the wind driving any sewage-gases backwards.

A sewer 4 feet high and 3 feet wide may be required for the removal of storm water ; while an iron pipe 12 in. in diameter would remove all the ordinary flow of water.

Main Sewer Ventilation.

Towns situate on lands rising considerably will best be sewerred in zones ; that is, by intercepting lines of sewers contouring the site, as such intercepting sewers will prevent gorging the low-level districts ; as, also, prevent the rush of sewage down steep gradients at high velocities, which in times of heavy rain may burst the low-level sewers at the steep gradient junctions. By intercepting lines of sewers, sewage may also, in some cases, be retained at such an elevation as to deliver it in the country by gravity, on to and over land for agricultural uses. Sewers with steep gradients, if the flow of sewage is unbroken, get up a velocity in the sewage which is liable to be very injurious in its wearing action on the sewers. Sewage should not be allowed to acquire a great velocity at any state or time of more than 4 (four) feet per second. Six feet velocity per second will take any grit, or other solids, along the sewer invert with a cutting and disintegrating action rapidly destructive to the material of the sewer.

Main sewers are underground conduits for sewage to flow down, and if they are not fully ventilated at regular intervals along the crown by fixed openings communicating with the external air, they become flues up which sewage gases will rise and pass through the drains to the connected houses.

Sewers formed along steep gradients therefore require to have more care bestowed on the means for ventilation than other sewers laid along flat districts, to prevent dangerous accumulations of sewage gases in the upper districts of towns. Sewers rising from lower and flatter districts should therefore have manhole or "*side entrance*" tumbling-bay and double ventilating arrangements as shown in Fig. 1, page 67. This form of tumbling-bay should be repeated on steep gradients at intervals of not less than 300 yards apart.

Steep gradients in sewers must be modified by forming vertical steps, or falls (as shown in Fig. 1), to prevent the sewage, during heavy rains, acquiring such a velocity as shall not only wear out the invert, blow the joints, but also burst the sewers. Earthenware pipe-sewers, when laid down steep gradients, should also be bedded and jointed with concrete. The steps, or falls, should be so formed as to prevent any accumulation of deposit.

Ordinary main sewer ventilation should be provided for on all sewers at intervals not greater than *one hundred yards*, or not fewer than 18 fixed openings for ventilation should exist on each mile of main sewer.

The upper, or "*dead ends*" of all sewers and drains should have means provided for full ventilation continued beyond the junction of the last house drain.

Details for manhole and side chamber for sewer ventilation are given in Drawing No. 3.

Provision should be made for the use of charcoal screens on man-holes. Charcoal may not, however, be required in all cases, and should only be exceptionally used, as it retards ventilation.

Steam-boiler or other furnaces and tall chimneys may be used for sewer ventilation where the owners of factories and of steam engines will permit of such use ; but the ordinary means for sewer ventilation must not on this account be dispensed with, as the ventilating effect of a furnace or tall chimney will be limited to a comparatively short length of the sewer, by the number of openings into the main sewers, such as house-drains, street-gulleys, &c.

Separate costly tall shafts or furnaces for main-sewer and house-drain ventilation cannot be of use in proportion to their cost. Sewers cannot be ventilated as tunnels and coal mines are, in which close air-ways have to be provided but also kept under control.

Sewers liable to be affected by the rise of tides or land floods, as on the sea-shore, or on a river, must be so arranged that any backing of the sewage shall not injuriously affect the sewers and drains within the town. The lower portion of any system of sewers below the level of high water of the sea, or land floods of an inland river, must therefore be cut off from the upper portions, and must be so abundantly ventilated that any sewage gases may be forced out at points specially provided for the purpose; and not be driven inwards and up the steeper sewers of the town through the drains and into the houses.

The ends of all sewers and drains at the lowest outlets must be so protected that the wind cannot blow in and force any sewage gases back to the streets and houses. Flap-valves, or other contrivances, may be provided to cover and protect outlet ends of sewers and drains, and so prevent the wind blowing in.

Means for full and permanent ventilation of town sewers and house drains are required to prevent stagnation or concentration of sewage gases within sewers and drains, and with numerous openings from the sewers to the external air, as described, there will be unceasing motion and interchange betwixt the outer air and the inner sewer air which will bring about and maintain extreme dilution and dispersion of any sewage gas so soon as generated. It has been found by experiment that in unventilated sewers the gas concentrates and so becomes deadly,* whilst in fully ventilated sewers the sewer air is purer than that of stables or even than in a public room when occupied. If sewer air at any sewer ventilator, or at any other point, should be offensive, additional means for ventilation on this sewer are required and should, as soon as possible, be supplied. Trapping should not be resorted to in such case.

* Men have lost their lives by entering unventilated sewers on some occasions in London, as also in other places. There are many towns in which the sewers are not ventilated, because the inhabitants refuse to have any open sewer ventilator at the street surface ; this is a sad mistake, as a town having unventilated sewers, and house drains connected with them, and also unventilated, must have disease in excess.

If cesspools are required for any purposes they should be made watertight, and be placed as far from wells and dwelling-houses as possible, and should be abundantly ventilated.

Dust-bins should also be fully ventilated.

Ventilation cannot be fully accomplished through single tubes or openings. There should never be less than two passages, or any single tube or pipe must be divided by a diaphragm.

Where charcoal is used in sewer ventilation it must be understood to retard motion, and provision should be made to meet this:—Charcoal trays, or boxes, for sewer ventilation should never have less than 1000 square inches of surface exposed for the passage of sewage gas to each 50 square inches of free opening to the outer air. The meshes of a charcoal tray may be about $\frac{1}{4}$ th of an inch. The charcoal (wood) may be about the size of coffee beans, clean sifted, and placed in a layer of 2 or 3 inches. Charcoal in a dry state acts best; but its disinfecting property is only diminished by damp: it is not entirely destroyed. The length of the intervals betwixt the renewals of the charcoal will depend upon the dryness of the situation where the material is placed, and the volume and strength of the gas to be acted upon. In some cases two or more charcoal trays may be used apart, one above the other, so that the gas to be acted upon may have to permeate and pass through the whole of the trays. The charcoal may require in some places to be renewed at intervals of six months. In ordinary sewer ventilation charcoal need not be used, as the more readily and freely the interchange can be from the sewer or drain to the outer air the better will the ventilation be.

For detached houses, villa residences, or larger establishments, drains should never end at the house to be drained, but should be continued beyond and above to some higher point or ventilating shaft where means for full and permanent ventilation can be provided so as effectively to relieve the house from any chance of sewage gas contamination.

Drains for soil and sink refuse should never traverse the basement of any house, but should be external; if, however, there are drains within a basement, and crossing it, such drains should be absolutely air and water-tight within such basement, and should also have full means for permanent ventilation provided outside at both sides of the basement. Pipes of earthenware may be bedded in concrete; in some cases pipes of cast-iron may be used within house basements.

All drains should be laid at the least their full diameters below the surface of the subsoil of any basement, and have a fall of not less than 1 in 60 towards the sewer. The full half diameter of the sewer (at least) should be below the junction of the house drain.

Wherever a trap is placed on a sewer or drain there should also be means for sewer and drain ventilation provided. Traps are only safe and useful in conjunction with full and permanent means for sewer ventilation.

It has been suggested that sewer and drain ventilation will so taint the atmosphere within and over a town as to cause houses at a lower level to pollute those situate at higher levels. Any serious injury from this result need not be feared; as, with the abundant means for venti-

lation suggested, the air within the sewers (by dilution) will be comparatively pure, and further dilution and dispersion will dissipate every trace of taint and danger, the dilution, through dispersion, being as the cube of the space and the velocity of the air for the time being.

Flushing Sewers and Drains.

On a system of sewers every manhole should be a flushing-chamber, so managed as to be charged with water for flushing purposes. There should also be a flushing-chamber at the head of each sewer and drain, and every flushing-chamber should be permanently ventilated. Where there is a public supply of water the flushing-chambers may be filled from the mains, where there is no such public supply they may be filled by water-cart. Flushing a sewer means accumulating water sufficient to pass down and along the sewer below with a rush when suddenly liberated, which water shall loosen and carry away all sediment. Leaving house-taps open, and propping the handles of water-closets will not flush drains and sewers, but will only waste water.* It is possible to injure sewers by overflushing them, and it is therefore the duty of a local surveyor to understand this, and to avoid it.

With sewers in right lines, and even gradients, from manhole to manhole (as directed to be made), the surveyor can first float a light cord from one manhole to the other below, then draw along a stronger rope to which scrubbers may be attached to cleanse effectually such sewers as have very little fall, and are consequently liable to accumulate deposit.

An ordinary amount of subsoil-water may be admitted into the sewers with advantage, as the regular flow will tend to prevent any silty deposit, and the dilution will tend to lessen the putridity of the sewage. Sewers formed in and along a naturally dry subsoil are liable to accumulate deposit by allowing the fluids to filter into the subsoil. The trench, in dry and porous subsoils, should therefore be made water-tight before the invert of the sewer is laid in it.

Springs of water, if of considerable volume, may require to be removed from a sewer trench independently of the sewer, to prevent this surplus water usurping the place of sewage.

Springs of water, and the water from canals, reservoirs, rivers, and streams, may occasionally be so near as to be easily made available for purposes of sewer-flushing. Where this is the case, it will be of great advantage to the local surveyor to arrange for such flushing power being made available.

Sewers and drains perform good service when they permanently lower the subsoil water within a town or near houses.

[The plans and drawings mentioned parenthetically can be obtained of the publishers, Messrs. KNIGHT & CO., Fleet Street.]

* In some districts watercloset valves are regularly propped open so as to run the water to waste as it is supposed to sweeten the closet. This is only wasting water to no useful purpose, and in all well regulated water-works such waste will be punishable by a money fine. Waterclosets in which there is a bad stench require ventilation; the house drain also requires ventilation.

CHAPTER V.

PRIVIES, WATERCLOSETS, ETC., OFFENSIVE DITCHES,
AND COLLECTIONS OF MATTER.

CLOSELY associated with the business of sewers, and following it immediately in the Act, is the subject of privies, &c. It is against the law for any new house to be built or any old house pulled down to the ground floor to be re-built without a sufficient water-closet, earth-closet, or privy, and an ashpit furnished with proper doors and coverings. Any person offending in this particular is liable to a penalty not exceeding twenty pounds. Should a surveyor or inspector of nuisances report to an Authority that a house is without this accommodation, a written notice is to be served upon the owner or occupier of the house requiring him to provide it, and if he should not comply with the requisition, the Local Authority may do the work required to be done, and may recover the cost from the owner. But if two or more houses have hitherto used one set of water-closet or privy accommodation, the Authority cannot compel the provision of more. Any enactment in force concerning the construction of a water-closet is to be deemed to be satisfied by the construction, with the approval of the authority, of an earth-closet.

Factory owners are called upon to provide privy accommodation, if they employ both sexes, for both sexes. (See Section 38.)

Section 39 gives any Urban Authority power to provide and maintain in proper order and convenient places, urinals, water-closets, earth-closets, privies and

ashpits for public accommodation. Some local regulations require their inspectors to carry keys to enable them to open the doors of common privies and ashpits that are kept locked, so 'as to ascertain whether they are kept clean. Any written application stating that a drain or any of the accommodation mentioned above is a nuisance or injurious to health, is to be attended to in this manner. If the occasion is too urgent to serve the usual twenty-four hours' notice upon the owner, the surveyor, or inspector, with or without assistants, is to enter the premises, open the ground and make an examination. If the subject of complaint is found to be in proper order, the ground is to be closed again, and all made good at the expense of the Authority. But if the drain, or closet, or privy, or ashpit, or cesspool, as the case may be, should be found in bad condition, then the Authority is to give notice to the owner or occupier of the premises requiring him within a reasonable and specified time to do the necessary works. And if he should not comply, the Authority can execute them, and recover the cost from him, or may by order declare the same to be private improvement expenses, and the defaulting owner is liable to a penalty not exceeding ten shillings for every day on which he should continue to make default.

In some rural districts where there are no sewers, cesspools must be still tolerated. They should then be built of sound materials. They should be watertight, arched or covered over, and a pipe or shaft for ventilation should be carried up from each, for cesspool gas is as inimical to the inmates of a dwelling connected with it, and forced to inhale it, as is sewer gas.

Ashpits higher than the floors of houses near them, or adjoining, should be specially looked after and condemned as unsanitary.

Every district will have its own bye-laws relating to the removal of the contents of privies, ashpits and cesspools. They will probably all agree in the main points, which are to insist upon the removal of all filth of the kind at hours when the process will be as little offensive as possible; and the instant removal of any of the matter that may dropped by the persons engaged in emptying the said receptacles.

When an urban inspector finds any accumulation of filth that ought to be removed, he is to give twenty-four hours' notice to the person to whom it belongs, or the occupier of the premises on which it exists, for its removal, and if it be not complied with, the manure or filth in question is to be vested in the Urban Authority, who may sell or dispose of it, and apply the proceeds in payment of the expenses incurred by them; and if there be any surplus, it *shall* be paid *on demand* to the owner of the matter removed. But if the expenses exceed the amount realised, the excess *may be* recovered in a summary manner from the person to whom it belongs, or from the occupier of the premises, or if there be no occupier, from the owner.

Every twenty lodgers in a common lodging-house should be provided with a separate closet or privy.

The model bye-laws suggest that earth-closets with fixed receptacles should be cleansed every *three months*, and those with movable receptacles *every week*; that privies with fixed or movable receptacles should be cleansed *every week*; that every ashpit should be cleansed *every week*, and used only as a receptacle for ashes, dust, and dry refuse. When the ashpit is in connection with the privy it should also be cleansed *every week*; and every cesspool should be cleansed every *three months*.

Another model bye-law advises that every occupier of a building or premises wherein or whereon any

horse or other beast of draught or burden, or any cattle, or swine may be kept, shall provide in connection with it a suitable receptacle for manure and all offensive matters, a little lower than the floor, with a cover to it, and a drain from it into a sewer or cesspool, which should also be emptied and cleansed *every week*.

In farmhouses, or other isolated dwellings, where there is no fall for sewage, earth-closets offer an improvement upon the old offensive cesspool. Here the offence, if any, must be less, for a box supersedes the cesspool. This is placed under the seat, and is not so large but that it can be easily emptied. Ashes, dried garden soil, peat, and tan, are used in different places to be cast into the seat-box after every use of it.

For disinfection of closets, drains, and gulleys, Calvert's Carbolic Acid Powder, containing 15 per cent. of pure carbolic acid, and coarse sulphate of iron, is exclusively used in Bristol, with good results.

CHAPTER VI.

SCAVENGING AND CLEANSING.

ONE of two ways of performing the scavenging of an urban district is generally selected. The Authority either establishes a staff under its own officers for this purpose, or puts the scavenging and removal of refuse to tender, and hands over the task to a contractor. Section 42 of the Act states every Authority *may*, and when required by the Local Government Board *shall*, themselves undertake or contract for—

The removal of house refuse from premises ;

The cleansing of earth-closets, privies, ashpits and cesspools (either for the whole or any part of their district); moreover every Urban Authority and any Rural Authority invested by the Local Government Board with the requisite powers may, and when required by order of the same Board shall, themselves undertake or contract for the proper cleansing of streets, and may also themselves undertake or contract for the proper watering of streets for the whole or any part of their district.

The necessary organisation and surveillance for all this work constitutes a large item in the duties of a borough surveyor, who is also inspector of nuisances. However, when the work is let to a contractor, he is also subject to the recurrence of many complaints requiring constant attention. So that, on the whole, if he had the choice, he would probably prefer that the undertaking should remain in his own hands.

There is a third plan, which is a combination of both of the above. Some Authorities employ a staff

to collect the sweepings and refuse ; and a contractor to remove the same. This answers admirably where the box-system is in use.

The occupiers of houses are required to clean their footways and pavements adjoining their premises, to remove their house refuse, and cleanse their earth-closets, privies, ashpits, and cesspools ; but in some places the Authorities clean every place. The bye-laws of each district will explain their local usage. When the Authority removes only the house refuse, the box-system, with bi-weekly rounds for the emptying of their contents, is found to work well.

In the parish of Paddington in the metropolis the plan is adopted of leaving a card about 8 inches square, with the letter D printed in large type on one side of it, at every house. At the back of it is printed the following notice :—

VESTRY OF PADDINGTON.

To the Inhabitants of the Parish.

In order to facilitate a regular and prompt removal of dust from private houses, it is recommended that when you require dust to be removed, this card be placed in one of the front windows of the house. The dust-carts belonging to the Vestry will pass through ——— on Friday in every week.

The dustmen in the employ of the Vestry are bound without fee or reward to remove dust, dirt, rubbish, cinders, ashes ; but you are earnestly recommended to BURN all matters likely to become offensive and dangerous to health, instead of placing them in the dust-bin.

The inhabitants are requested upon any refusal by the men in the employ of the Vestry to remove dust, &c., to take the number upon the cart, and send notice thereof to the Dust Inspector at the Vestry Hall, Harrow Road.

By order,

FRANK DETHRIDGE,
Vestry Clerk.

*Vestry Hall,
Harrow Road.*

I would here propose that every rural district should have its paid scavenger. The trifling expense of a small sum to some steady man past constant

labour would be of little consequence compared to the convenience to village residents of proper scavenging.

For the perfection of street management we must look to Paris. As soon as a new road or boulevard is formed, it is planted with a row of trees on either side of it, and kept fresh and healthy by watering. All the parks, promenades, gardens and squares are maintained in a state of Arcadian beauty, with cypresses, bamboos, pampas grass, ivy-grown rocks, waterfalls, Alpine plants, avenues of plane trees, lines of roses, rustic bridges crossing tiny streams, and almost every other charming feature that can be composed of turf, trees, water, and flowers. A deep fresh green pervades them all, lit up with the colours of flowers. This freshness is due to the system of watering. Long lengths of metal hose, made in joints about 6 feet long, with junctions of strong leathern hose, each length supported on two pairs of little wheels, are the means employed. Every three feet are perforations through which jets out a sprinkling of water of sufficient force to do the required work efficiently without converting everything into mud. For watering the streets the same kind of hose, running on little low wheels is used, only there is but one jet, which is at the end, and which the man in charge accommodates to the traffic. For roads and pathways about the public places a deliquescent salt, obtained from the residue of carbonate of soda, has been tried, which was sprinkled by hand. This was found to be cheaper than water in places where there was but little traffic, because neither pipes nor hydrants were required, but more costly where there was much traffic, because it had to be frequently renewed there.

Serious inflammatory symptoms in the eyes are sometimes the result of street dust. Dr. Loring of New York records in the *New York Medical Record*

several cases in which severe conjunctival inflammation has been set up as the result of the dust in the New York streets. His patients complain, first, of a slight lachrymation. Soon artificial light seriously disturbs the organ, giving rise to an intolerable burning and pricking sensation. Surely prevention is better than cure in this matter, as in most others.

There has been much ingenuity in devising appliances to scrape roads and streets, clean and water them. In the Catalogue of James & Son, Cheltenham, an improved road-scraper for collecting mud, price 3*l.* 10*s.*, is to be noted, which, in the hands of a village scavenger, would make a great improvement to a rural district in bad weather. There is, too, a "tumbler cart" for the removal of sweepings, night soil, sewerage manure, so put together as to be watertight, and suspended on the axle in such a manner that it can be turned entirely over to discharge its load. (This is effected by an endless chain working on ratchet wheels attached to the shafts and body.) There are water-carts with two wheels, three wheels, and four wheels. Those with three wheels are intended for hilly roads, as the third one prevents the weight bearing on the horse's back. Either can spread a fine shower of water about 20 feet across. There are also mud-carts made very low on the axle, to make loading easy; and dust-carts made low too, so that they may be filled without the use of steps or ladder. A novelty is called india-rubber squeezers, or the perfect cleaner of muddy pavements. Another appliance useful for inspectors is the stone-crusher, for crushing stone to about the size of walnuts and fine gravel mixed, which makes an excellent material for repairing roads. When provided with a screen, to separate the gravel from the stone, it is useful for the formation of asphalt for footpaths. A sewerage or tank-cart is also made for carrying and distributing

thick slush, such as liquid manure, with a distributor that scatters a shower of its contents in a cascade about 15 feet wide ; and this is ingeniously fitted with a force-pump to act as an irrigator as well as fire-engine. As mentioned before, the advertising columns of the *Builder* and other building-trade journals should be looked to for information concerning appliances that are so necessary to the proper maintenance of street and road cleanliness.

CHAPTER VII.

WATER SUPPLY.

IMPURE water, like impure air, must have an unfavourable influence on health compared to the benefit that must accrue to a community from the possession and use of an ample supply from a pure mountain spring. Perhaps no pronounced disease may arise, but an undermining influence is at work rendering the general health poor and open to the development and spread of "trouble." One way, therefore, to benefit large sections of our fellow creatures is to bring to our towns the soft, pure, abundant waters that are stored in our lakes in our mountain districts. A great project of this kind is not likely to be placed in the hands of an inspector of nuisances ; but, if employed also as surveyor, he may be entrusted with the charge of works when accomplished ; and he may also be required to propose, revise, or superintend works of smaller consequence for the supply of rural districts ; and so, in a smaller way, while fulfilling his duties, be the means of much service to those around him. There are districts that are devoid of hills, and consequently of springs and fountains ; these generally possess underground reservoirs for the reception of a large proportion of the ordinary rainfall. The water thus collected and stored up between strata—that is, permeable and impermeable—can be rendered available for man's use by deep wells (not shallow pools into which the surrounding surface waters filter through the adjacent filth). The maps of the Geological Survey show the

extent of the water-bearing and impervious formations so accurately that an inspector may almost determine by their aid whether a village requiring water is so placed as to be able to obtain a supply by means of a well, and the best spot for it to be sunk. In a rough and ready way it has been said that water coming off a limestone formation is hard, and that coming off sandstone is soft. There are some districts destitute of both mountain springs and the water-bearing strata. For these nothing but the nearest brook remains ; but this can be improved by being impounded in small reservoirs, and kept free from surface pollution. Should there be no brook, then the rain should be gathered, and stored in underground tanks. It is the inspector's duty to report to the authority any damage done to the waterworks, and any waste or fouling of the water. Damage to the waterworks may be wilful or otherwise. Reservoirs have bursted in our own times with fearful results ; and floods are a fruitful source of constantly recurring damages. Waste may result from the damages made by design or storms, or leakage of the pipes, or from fittings that are not watertight ; or from taps left running through carelessness, from mischief, or by reason of bursts from frost. And fouling occurs from noxious matters being discharged into waters ; from dead cats and dogs being thrown into them ; from the forming of decaying organic matter on the surface of the waters ; from drainage ; from children playing ; from cattle and other animals coming to drink ; and other causes more difficult to be ascertained, such as contamination from sewer gases in cisterns and in pipes connected with the water-closet service in a house. For all these items the inspector should be on his guard, as before indicated.

Both urban and rural authorities may supply their districts with a proper and sufficient provision of

water. Most towns have a supply of some sort, though too frequently deficient both in quality and quantity; but some rural districts, as with sewerage, are still very badly off. Isolated farms and dwellings, too, are often in great distress in dry seasons. Many villages have a partial supply only, which generally leaves the highest part of it without any, especially in the summer months. To all of these cases the powers conferred by the Act are of great benefit. An Authority can require the owner of a house to provide it with water, if this can be done at a cost not exceeding the water-rate authorised by any local Act in force within the district; or, if there be no local Act in force, at a cost not exceeding twopence a week, or any other sum the Local Government Board may deem reasonable. The rural inspector reports the absence of water, the clerk is instructed to communicate with the owner, and in many cases no further action is required to bring to lonely houses and farmsteads the spring that has been running to waste down a hillside and into a burn or ditch, entailing on the inhabitants a harassing carriage of water that has kept its health-giving use within the narrowest limits possible.

In all cases where a spring that is used by the residents issues from the ground in a field occupied by cattle, the inspector should recommend his Authority to fence it round at a proper distance to prevent the adjacent soil from being fouled. A trough filled by the waste by gravitation, and placed outside the fence, would be sufficient for the cattle. A better plan is to keep all traffic away from the spot, by covering it over and conveying the water by pipe nearer to those who use it if the level should permit.

Villages generally are, however, beginning to put themselves in order in this matter. Nearly every householder now understands the supreme importance

of a good water supply, and there are but few dissentients on the score of expense when a proposal is made to improve upon shortcomings. In one instance, in the present writer's experience, a village on a hill, where water was always scarce, has been amply supplied from a spring issuing from the side of a higher hill nearly three miles away. And many other villages are making sanitary progress in the same direction. Nevertheless much remains to be done. Here is a picturesque village on a salmon-haunted stream. It is a wide, sloping street, forking into two at the lower end down by the river, with high banks topped by luxuriant trees looking down on it. Here, too, is a grand old castle, shattered and roofless. Here, too, is a venerable Norman church, with massy Norman arches and old oak carvings. There is a fine market cross still standing *in situ*, and there is a general air of serenity and historic interest. But down both edges of the road are open channels running with dirty moisture. Behind most of the houses, in a little backyard, are two features—a privy and a well, and sometimes a third, which is a pig-sty; and from the privy, past the well and close to it, runs a stone cundy across the yard and through the house, generally below the floors, to convey the liquid refuse from it to the channel in the street. There is a well in the main street, with an ornamented covering, that adds to the pleasantness of the general aspect; but, as it is at the low end of the village, the inhabitants of the high end have to carry all their water uphill to their houses from it, or use the water from their wells, if they are so fortunate, or unfortunate, as to have one.

Here is another village of a different type, straggling, dilapidated, and uninteresting, with no relic of olden times and no silvery stream winding past it. Here, too, are two channels down the one long street, and all the unhappy-looking houses depend upon two or

three shabby stand-pipes with a polluted supply. Sickness is consequently often present here, and attention has been directed to the unsanitary circumstances.

Here is a third type—a model village of pretty new cottages, with gardens before them ; a model school, a model smithy, a clean inn, a rustic bridge striding the glittering river, all toned down by the presence of an old grey stone church, with a square embattled tower. There was water ; there was sewerage ; and yet there was fever. Upon examination drains were found to be stopped up, the sewerage system not well devised, and the water not very good.

The following specification for laying down a new water main in a village on a hill-side, where a smaller one had been placed at the beginning of this century and become insufficient, by a few easily arranged alterations, additions, or omissions, may be found useful in setting out a similar undertaking :

SPECIFICATION

Of Works to be executed in laying down a New Water Main in the village of G—, for the Rural Sanitary Authority of A. Union.

F. R. W., Inspector.

July, 1881.

Take up the road metal surface, and relay it at the conclusion of the works.

Dig trench two feet deep the whole length of the village from the 2-inch main near the trough at the west end to three yards past the water-pipe junction at Dr. R.'s house at the east end of it. Fill in and ram after the pipes are laid.

Cut off all existing branches, and take up the existing lead water main pipe extending through the length of the village or so far as it exists. The private junction pipes are not to be disturbed past the main pipes except at the orders of the owners, who may give directions and must pay for the same.

The existing lead pipes are supposed to be 1½ inch diameter outside, 300 yards long, and ¾ inch diameter outside, 150 yards long. These pipes so taken up are to be the property of the contractor, and are to be allowed for in his tender.

Provide and lay 2-inch underground cast iron socketed pipes, coated with Smith's patent solution, along the main street joined to the

2-inch main at the trough at the west end, and three yards past Dr. R.'s junction at the east end, 7 lbs. weight to the foot run, otherwise 0 cwt. 1 qr. 14 lbs. weight per 6 feet length of pipes.

Each socketed joint to be well run with lead and spun yarn, and made perfectly water-tight at joints.

In case of a sewer or sewers, or cundy or cumdies being met with along the line of trench special directions will be given to divert these, or the water pipe, in order to prevent any sewer, drain or cundy, being too near the water mains.

Provide and fix No. 2 brass lined full way Guest and Chrimmes stop-cocks and No. 1 full way sludge-cocks to the 2-inch main in such positions as shall be directed by the sanitary inspector. Build a stone or brick chamber round these, and metal road or pavement boxes to allow of free access for repairs without disturbing the roadway, and with hinged metal cover.

Provide No. 2 iron socket keys.

Provide and fix where directed a Guest and Chrimmes patent fire hydrant and air-trap with gutta-percha valve and No. 1 portable stand pipe with tap, stone or brick chamber and metal road boxes with hinged metal covers.

The contractor is to state in his tender prices for providing and fixing, at the time of laying down the 2-inch main diminution tinned screwed sockets for the private junctions of iron or lead pipes in sizes of 1 inch, $\frac{3}{4}$ inch, and $\frac{1}{2}$ inch. These diminution sockets will be fixed at the expense of this Authority for each private junction. The number will be determined and their positions indicated as the work proceeds.

The contractor is to provide all materials, labour and cartage, and execute the work in the best manner. Each length is to be tested.

As soon as the tender is accepted the contractor is to sign this specification and proceed with the work. One month of time will be allowed for executing the contract, viz. 2 weeks for preparation in forwarding the pipes, and 2 weeks for opening the trench, taking up old pipes, laying new, and filling in.

In order that the inhabitants may not be deprived of water into their houses longer than possible, the two weeks mentioned will be strictly adhered to under penalty of ten shillings per day for every day the work is uncompleted beyond the time specified.

The contractor is to take the risk and be answerable for all injury to persons or animals while the works are proceeding, and is, if necessary, to protect and watch the trench and works by day or night.

The work will be paid for at the rate of 80 per cent. of the contract sum and work certified by the inspector to be executed at the conclusion; 20 per cent. will be retained for one month after conclusion.

The contractor is to undertake to maintain the works in perfect working order for three months after completion, at his expense.

The following is a good form of agreement for a contractor to sign :—

An agreement made this first day of July, one thousand eight hundred and eighty-one, between the Rural Sanitary Authority of the A. Union of the one part and E. P. of G., in the county of N., plumber, of the other part, Witnesseth that the said E. P. doth hereby promise and agree with the said Rural Sanitary Authority that he will well and substantially, and in a lasting and workmanlike manner, and with good and sufficient materials, make, do and complete all the necessary work in connection with the laying new water pipes in the village of G. according to the specification and tender hereto annexed. And in consideration of the said E. P. completing the work to the satisfaction of the inspector of the said Authority, they the said Authority will pay the sum indorsed upon his said tender in accordance with the said specification. As witness the hands of the parties.

It is difficult to think of a greater general blessing to this country than the small matter of a water-tap in every house, or in every room used as a complete residence ; for it is not too much to say that dirt is the cause of many diseases. If there were facilities for *everyone* to wash his entire body every twenty-four hours as systematically as he breaks his fast, there could not fail to be a marked improvement in the health of the population. And the mere getting rid of the unnecessary fatigue and exposure of carrying buckets of water would be another source of health.

Appended are the suggestions issued by the Local Government Board in response to applications for information when their sanction is required for loans :—

WATER SUPPLY.

Suggestions.

The general principles of water-supply may be stated briefly as follows :—

1. To select the purest available source after careful analysis.
2. To filter the water, if necessary, in order to free it from suspended matter and from dissolved organic matter.
3. To store it in covered tanks, and to raise it a sufficient height for distribution by gravitation.

Applying these principles water may be obtained—

From rivers and streams.

- „ natural springs.
- „ wells artificially formed.
- „ impounding reservoirs.
- „ a combination of two or more of the sources named.

And may be conveyed for distribution,—

By means of open conduits (before filtration).

By „ covered conduits, always *after filtration*.

By „ cast-iron pipes under pressure.

Where a district is to be supplied with water, all other things being equal, the softest and purest water should be adopted.

A water-supply may be gravitating; or, the water may be pumped by steam-power. The relative economy of one or the other form of works will depend on details of cost and quality of water. As a rule, gravitating works require the largest capital. The annual working expenses of a pumping scheme may, however, be greatest.

Reservoirs, for service distribution, should be covered.

If filters are used the water should not be exposed in open reservoirs and tanks after filtration.

Cast-iron pipes, properly varnished, should be used for street-mains. It is not advisable to use mains less in internal diameter than three inches.

Lead should not be used with soft water, either in service pipes or in cisterns. Wrought-iron tubes with screw-joints may be used for house-service. All house-taps should have screw-joints, and be of the description known as “*screw-down*,” so as to admit of easy repairs.

In jointing and fixing wrought-iron service pipes care should be taken to insert double screw-joints at convenient points, to allow of the removal of a length of pipe for alteration and repairs.

Wrought-iron service-pipes are cheaper, stronger, and more easily fitted than service-pipes of lead. Certain sorts of made ground, in towns, act rapidly and injuriously on both lead and iron pipes, such as furnace-ashes, waste-gas, and chemical refuse, old building refuse containing lime. Pipes should not be laid in such material without a lining of sand or puddle or other special protection.*

Earthenware pipes may be used for water-conduits, provided the joints are not placed under pressure.

Aqueducts of iron will, probably, be cheaper than masonry or brick-work constructions.

Water may be brought in by gravity, that is, water obtained at a distance may be found at such an elevation above the district to be supplied as to allow of its flowing through conduits or pipes to the tanks or cisterns from which it is to be distributed. A fall of 5 feet per mile is sufficient for a conduit of 2 feet diameter. Conduits of larger diameters may have less fall, down to 6 inches per mile, as on the New River, London.

Well-water will vary in purity according to the nature and the soluble matters contained in the ground from which the well derives its supply.

* Wrought-iron service-pipes for gas are laid in a wooden trough V shaped, which is filled with asphalt around and over the pipe so as to protect it from the subsoil. Some of the London gas-companies protect wrought-iron pipes in this manner.

Shallow wells are always liable to pollution from vegetable matter, or even from animal matter in the surface soil. Deep wells only, i.e. wells of a sufficient depth to afford water of a requisite purity, should be sunk; and the surface-soil water should be cut off from the deep water by casing the well above.

Salt rock is found in the New Red Sandstone formation. There is risk in deep sinking from this cause; but good water is frequently found in the New Red Sandstone.

A spring is the lowest point or lip of an underground reservoir of water in the stratification. A well sunk in such strata will most probably furnish, besides the volume of the spring, an additional supply of water.

Natural springs may be utilised by storing the water in a reservoir which will contain the flow of one entire day or longer period.

Such reservoirs should be walled with masonry, and may be covered in to protect the water from contamination.

Springs of water at a distance may be conducted in channels contouring the intervening distance.

The fall for a conduit may vary according to circumstances. The fall should not be less than 1 in 10,000, nor greater than 1 in 300, unless cast-iron pipe-conduits are used.

In forming an earthenware pipe-conduit, great care must be taken to make the trench water-tight, and then to lay and joint the pipes so as to secure that the conduit shall be sound and water-tight through its whole length, to prevent leakage into the subsoil, and to obviate the risk of impure water from the subsoil entering the pipe.

In forming a conduit the pipes should be laid in straight lines from point to point. There should be means of inspection and ventilation in each quarter mile, and of washing out at all convenient points.

Valley lines may be crossed by means of cast-iron syphon pipes—that is, a pipe may be laid across a valley to conduct the water under pressure.

All valley or syphon lines should have double the fall in their length of the ordinary conduit.

There should be means provided to wash out and cleanse such syphon pipe or pipes.

Cast-iron pipes should be coated inside and out with black varnish.

Turned and bored joints are cheapest.

Wrought-iron pipes with screw joints may be used up to 1½ in. diameter.

Cast- or wrought-iron, not lead, should be used for elevated tanks and cisterns.

Tanks to store rain-water may be of masonry. They should either be arched over, or be roofed, so as to protect the water from the direct action of the sun and from fouling.

The ground excavated for the formation of a tank should be made perfectly water-tight. The bottom may be covered with clay-puddle and the side walls be backed or lined with clay-puddle. The thickness of the puddle should not be less than 12 in.

If the site selected for a tank is sand, gravel, or opened jointed rock, great care must be taken to give the puddle a full and even bearing over the whole surface area; open joints in rock must be cleaned out and then be filled up with concrete. In gravel large stones must be removed, and the entire surface brought to a level, smooth, and even plain. Clay-puddle will only resist the pressure of water when it rests solidly on an even bed, so as to prevent the water forcing holes through it, which will be the case if there is a rough uneven surface and open spaces beneath.

Tanks require to have an inlet-pipe, an outlet or supply-pipe, a wash-out or cleansing, and an overflow-pipe. These latter, the cleansing and overflow, may be joined.

The main tank or tanks should have valve-wells so arranged as to enable the system of supply to be carried on independently of the main tank.

On Plate No. 5 attached hereto is shown a plan and section of an underground storage tank with valve-wells.

By this arrangement the supply of water will flow direct to the inlet-well, and may be passed on through this well to the main tank; the supply may be obtained from the outlet well by opening the valve in the main tank and the valve in the supply well. By closing the valves communicating with the main tank in both wells, and opening the valve on the end of the connecting pipe in the inlet-well and the valve on the supply-pipe in the outlet-well, the supply of water may go on independently of the main tank. The overflow must be formed at the inlet-well to be connected with the wash-out. There must be manhole openings in the covering arches, and end windows in each bay, as shown on Plate No. 5. This is merely a sketch to show the general arrangements.

Elevated tanks for immediate or daily supply of water should be of cast-iron or of wrought-iron. Cast-iron requires more practical skill in construction.

In arranging cast-iron tanks of large dimensions care must be taken to support the bottom and stay the sides.

Cast-iron or wrought-iron tanks should be arranged so that the supply of water may be carried on in a corner compartment, as shown in the sketch of a cast-iron tank, with a separate supply cistern, to allow of the main tank being repaired, cleaned, and occasionally painted or varnished.

Junctions of bolts and tie-rods may give way if not repaired in time, Cleaning and painting should therefore be regularly done once a year.

Wrought-iron tie-rods must not have a strain exceeding six tons for each square inch of cross sectional area of the best iron rods.

Iron tanks should not be exposed to the direct action of the sun, but should be clothed. An enclosure of boards with felt beneath will form a good protection. Water, especially for drinking, must be kept cool.

The sketch is not complicated by showing any details of tank-plates or tie-rods, but is intended only to show the proposed mode of arranging a small inner tank, within which all the operations of supply may be

carried on independently of the larger tank. This will be found to be of the utmost importance in use. The small tank will be connected with the larger tank by means of a pipe having a valve on it. (Drawing 5.)

In arranging a main-pipe from pumps, the pipes should have sectional capacity sufficient to allow of the velocity in such main-pipe not exceeding 2 feet per second, as friction increases in proportion to the velocity.

Where a river flows through a valley over porous substrata, sinking a well or wells in the strata within the influence of the river filtration is a cheap and ready method of obtaining river-water naturally filtered. Wells so situated must be carried above the level of extreme floods.

If a single well on a river bank does not produce sufficient water, or if the subsoil is clay impervious to water, then trenches may be excavated parallel to the river or stream, in which trenches perforated earthenware pipes may be laid leading to a well or wells. The trenches above such pipes should be filled in with fine assorted gravel, charcoal, and sand, so as to form a filtering medium within reach of the dry weather flow of such stream or river. These trenches should not be less than six feet deep to the top of the pipes.

Any overflow or waste-water pipe from a service reservoir or tank should deliver the water at an open end into a channel, sewer, or drain, so as to prevent gases rises back through such overflow or waste-water pipe to the water in the reservoir or tank, a result very apt to follow if the pipe is directly connected with the sewer or drain.

Water readily absorbs foul gases, and may become poisonous by such means. The possibility of such contamination taking place must therefore be prevented.

Waterworks conduits should be laid at such depth and be so covered with earth as to prevent the water becoming heated unduly by the rays of the sun, or being injuriously affected by frost in winter. This depth may be considered as not less than three feet.

Brick and masonry tanks, if arched, may be covered in with sand or fine earth to the depth of 18 inches, which will preserve the water cool.

All covered reservoirs and tanks should be ventilated.

All supply-pipes should be arranged in such manner as to allow of easy inspection and subsequent repairs. Stop-taps should be placed betwixt the main and the building in all cases, so as to allow of isolation of any line of service-pipe for repairs.

All house service-tanks and service-pipes should be fixed in such manner that the best rooms shall not be flooded in case of leakage or overflow.

Ready means of access to all tanks and cisterns should be provided to allow of inspection, cleansing, or repairs. Where gas is in use a jet, or ring of jets, may be so placed that during severe frosts the pipes and tanks shall be preserved from freezing.

Up-bends should not be formed on lines of main-pipes or on service-pipes. If up-bends are inevitable, air-valves should be provided to let out the air at such bends.

Bends should not be formed at right angles on pipes, but the pipe should be brought round in a curve.

All mortar used in waterworks should be capable of setting under water.

Portland or Roman cement may be used.

Deep well-sinking or deep boring necessarily involves special knowledge and appropriate and special tools. A description of such work and such tools is not needed by a practical well-sinker, and would not be of use to any one else.

A public supply of water should not be less in volume than 15 gallons daily per head of the population. This, in towns below 20,000 population, will include water for public purposes and for trade requirements. High pressure and constant service should be secured wherever practicable.

Water at and below six degrees of hardness is considered "soft water": above this range water is termed "hard."

Hardness in water implies one grain of bi-carbonate or sulphate of lime in each gallon of water.

Each degree of hardness destroys $2\frac{1}{2}$ ozs. of soap in each 100 gallons of water used for washing. Soft water is, commercially, of more value than hard water, in proportion to the worth of 5 ozs. of soap to each 200 gallons for each degree of hardness.

Where water is drawn from a river, and is occasionally turbid, there should be sufficient reservoir capacity to receive and store not less than ten (10) days supply to allow of subsidence before filtration.

Sand-filters should not be forced to filter at a greater rate than about 50 gallons for each superficial foot of sand surface ; in each 24 hours.

Sand-filters will require surface cleansing, probably on an average not less than twelve times in each year. During hot summer weather surface cleansing may be required at intervals of a week. It will be of the utmost importance to filter through clean materials at all times.

ROBERT RAWLINSON, C.B.,

*Civil Engineer and Chief Engineering Inspector
of the Local Government Board.*

Local Government Board,
October 1874.

SPECIMEN REGULATIONS.

The following Regulations as to House Fittings for Water Supply in the Metropolis, settled by the Board of Trade, will be found useful for other Towns.

REGULATIONS MADE UNDER THE METROPOLIS WATER ACT, 1871.

1. *Place of communication-pipe.*—No “communication-pipe” for the conveyance of water from the waterworks of the company into any premises shall hereafter be laid until after the point or place at which such “communication-pipe” is proposed to be brought into such premises shall have had the approval of the company.

2. *Weight of lead pipes.*—No lead pipe shall hereafter be laid or fixed in or about any premises for the conveyance of or in connection with the water supplied by the company (except when and as otherwise authorised by these regulations, or by the company), unless the same shall be of equal thickness throughout, and of at least the weight following, that is to say :—

Internal Diameter of Pipe in Inches.	Weight of Pipe in lbs. per lineal yard.
$\frac{3}{4}$ -inch diameter.	5 lbs. per lineal yard.
$\frac{7}{8}$ ” ”	6 ” ”
$\frac{1}{2}$ ” ”	$7\frac{1}{2}$ ” ”
$\frac{3}{4}$ ” ”	9 ” ”
1 ” ”	12 ” ”
$1\frac{1}{4}$ ” ”	16 ” ”

3. *Interior pipes.*—Every pipe hereafter laid or fixed in the interior of any dwelling-house for the conveyance of, or in connection with, the water of the company, must, unless with the consent of the company, if in contact with the ground, be of lead, but may otherwise be of lead, copper, or wrought-iron, at the option of the consumer.

4. *Not more than one communication-pipe to each house.*—No house shall, unless with the permission of the company in writing, be hereafter fitted with more than one “communication-pipe.”

5. *Every house, with certain exceptions, to have its own communication-pipe.*—Every house supplied with water by the company (except in cases of stand pipes) shall have its own separate “communication-pipe.” Provided that, as far as is consistent with the special Acts of the company, in the case of a group or block of houses, the water-rates of which are paid by one owner, the said owner may, at his option, have one sufficient “communication-pipe” for such group or block.

6. *No house to have connection with fittings of adjoining house.*—No house supplied with water by the company shall have any connection with the pipes or other fittings of any other premises, except in the case of groups or blocks of houses, referred to in the preceding Regulation.

7. *Connection to be by ferrule or stop-cock.*—The connection of every "communication-pipe" with any pipe of the company shall hereafter be made by means of a sound and suitable brass screwed ferrule or stop-cock with union, and such ferrule or stop-cock shall be so made as to have a clear area of waterway equal to that of a half-inch pipe. The connection of every "communication-pipe" with the pipes of the company shall be made by the company's workmen, and the company shall be paid in advance the reasonable costs and charges of and incident to the making of such connection.

8. *Material and joints of external pipes.*—Every "communication-pipe" and every pipe external to the house and through the external walls thereof, hereafter respectively laid or fixed, in connection with the water of the company shall be of lead, and every joint thereof shall be of the kind called a "plumbing" or "wiped" joint.

9. *No pipe to be laid through drains, &c.*—No pipe shall be used for the conveyance of, or in connection with, water supplied by the company, which is laid or fixed through, in, or into any drain, ashpit, sink, or manure-hole, or through, in, or into any place where the water conveyed through such pipe may be liable to become fouled, except where such drain, ashpit, sink, or manure-hole, or other such place, shall be in the unavoidable course of such pipe, and then in every such case such pipe shall be passed through an exterior cast-iron pipe or jacket of sufficient length and strength, and of such construction as to afford due protection to the water-pipe.

10. *Depth of pipes under ground.*—Every pipe hereafter laid for the conveyance of, or in connection with, water supplied by the company, shall, when laid in open ground, be laid at least two feet six inches below the surface, and shall in every exposed situation be properly protected against the effects of frost.

11. *No connection with rain water receptacle.*—No pipe for the conveyance of, or in connection with, water supplied by the company, shall communicate with any cistern, butt, or other receptacle used or intended to be used for rain-water.

12. *Stop-valve.*—Every "communication-pipe" for the conveyance of water to be supplied by the company into any premises shall have at or near its point of entrance into such premises, and if desired by the consumer within such premises, a sound and suitable stop-valve of the screw-down kind, with an area of waterway not less than that of a half-inch pipe, and not greater than that of the "communication-pipe," the size of the valve within these limits being at the option of the consumer. If placed in the ground, such "stop-valve" shall be protected by a proper cover and "guard-box."

13. *Character of cisterns and ball-taps.*—Every cistern used in connection with the water supplied by the company shall be made and at

all times maintained water-tight, and be properly covered and placed in such a position that it may be inspected and cleansed. Every such existing cistern, if not already provided with an efficient "ball-tap," and every such future cistern shall be provided with a sound and suitable "ball-tap" of the valve kind for the inlet of water.

14. *Waste pipes to be removed or converted into warning-pipes.*—No overflow or waste-pipe other than a "warning-pipe" shall be attached to any cistern supplied with water by the company, and every such overflow or waste-pipe existing at the time when these regulations come into operation shall be removed, or at the option of the consumer shall be converted into an efficient "warning-pipe," within two calendar months next after the company shall have given to the occupier of, or left at the premises in which such cistern is situate, a notice in writing requiring such alteration to be made.

15. *Arrangement of warning-pipes.*—Every "warning-pipe" shall be placed in such a situation as will admit of the discharge of the water from such "warning-pipe" being readily ascertained by the officers of the company. And the position of such "warning-pipe" shall not be changed without previous notice to and approval by the company.

16. *Buried cisterns prohibited.*—No cistern buried or excavated in the ground shall be used for the storage or reception of water supplied by the company, unless the use of such cistern shall be allowed in writing by the company.

17. *Butts prohibited.*—No wooden receptacle without a proper metallic lining shall be hereafter brought into use for the storage of any water supplied by the company.

18. *Ordinary draw-tap.*—No draw-tap shall in future be fixed unless the same shall be sound and suitable and of the "screw-down" kind.

19. *Draw-taps in connection with stand-pipes.*—Every draw-tap in connection with any "stand-pipe" or other apparatus outside any dwelling-house in a court or other public place, to supply any group or number of such dwelling-houses, shall be sound and suitable and of the "waste-preventer" kind, and be protected as far as possible from injury by frost, theft, or mischief.

20. *Boilers, waterclosets, and urinals to have cisterns.*—Every boiler, urinal, and watercloset, in which water supplied by the company is used (other than waterclosets in which hand flushing is employed), shall, within three months after these regulations come into operation, be served only through a cistern or service-box and without a stool-cock, and there shall be no direct communication from the pipes of the company to any boiler, urinal, or watercloset.

21. *Watercloset apparatus.*—Every watercloset-cistern or watercloset service-box hereafter fitted or fixed in which water supplied by the company is to be used, shall have an efficient waste-preventing apparatus, so constructed as not to be capable of discharging more than two gallons of water at each flush.

22. *Urinal-cistern apparatus.*—Every urinal-cistern in which water supplied by the company is used other than public urinal-cisterns, or cisterns having attached to them a self-closing apparatus, shall have an

efficient "waste-preventing" apparatus, so constructed as not to be capable of discharging more than one gallon of water at each flush.

23. *Watercloset down-pipes*.—Every "down-pipe" hereafter fixed for the discharge of water into the pan or basin of any watercloset shall have an internal diameter of not less than one inch and a quarter, and if of lead shall weigh not less than nine pounds to every lineal yard.

24. *Pipes supplying watercloset to communicate with cistern only*.—No pipe by which water is supplied by the company to any watercloset shall communicate with any part of such watercloset, or with any apparatus connected therewith, except the service-cistern thereof.

25. *Bath to be without overflow pipe*.—No bath supplied with water by the company shall have any overflow waste pipe, except it be so arranged as to act as a "warning-pipe."

26. *Bath apparatus*.—In every bath hereafter fitted or fixed the outlet shall be distinct from, and unconnected with, the inlet or inlets; and the inlet or inlets must be placed so that the orifice or orifices shall be above the highest water level of the bath. The outlet of every such bath shall be provided with a perfectly water-tight plug, valve, or cock.

27. *Alteration of fittings*.—No alteration shall be made in any fittings in connection with the supply of water by the company without two days' previous notice in writing to the company.

28. *Waterway of fittings*.—Except with the written consent of the consumer, no cock, ferrule, joint, union, valve, or other fitting, in the course of any "communication-pipe," shall have a waterway of less area than that of the "communication-pipe," so that the waterway from the water in the district-pipe or other supply-pipe of the company up to and through the stop-valve prescribed by Regulation No. 12, shall not in any part be of less area than that of the "communication-pipe" itself, which pipe shall not be of less than a half-inch bore in all its course.

29. *Weight of lead pipes having open ends*.—All lead "warning-pipes" and other lead pipes of which the ends are open, so that such pipes cannot remain charged with water, may be of the following minimum weights, that is to say:—

$\frac{1}{2}$ -inch (internal diameter)	. . . . .	3 lbs. per yard.
$\frac{3}{4}$ " do.	. . . . .	5 "
1 " do.	. . . . .	7 "

30. *Definition of "communication-pipe"*.—In these Regulations the term "communication-pipe" shall mean the pipe which extends from the district pipe or other supply pipe of the company up to the "stop-valve" prescribed in the Regulation No. 12.

31. *Penalties*.—Every person who shall wilfully violate, refuse, or neglect to comply with, or shall wilfully do or cause to be done any act, matter, or thing, in contravention of these Regulations, or any part thereof, shall, for every such offence, be liable to a penalty in a sum not exceeding 5*l*.

32. *Authorised officer may act for company*.—Where under the foregoing Regulations any act is required or authorised to be done by the company, the same may be done on behalf of the company by an

authorised officer or servant of the company, and where under such Regulations any notice is required to be given by the company the same shall be sufficiently authenticated if it be signed by an authorised officer or servant of the company.

33. *Existing fittings*.—All existing fittings, which shall be sound and efficient, and are not required to be removed or altered under these Regulations, shall be deemed to be "prescribed fittings" under the "Metropolis Water Act, 1871."

P.S.—Water is wasted in several ways, as by defective works and arrangements, by improper fittings, and by abuse and neglect; proper fittings and sound workmanship will give good works a fair commencement, but subsequent inspection and repairs will be necessary so long as they are in use.

[*The drawings mentioned parenthetically can be obtained of the publishers, Messrs. KNIGHT & Co., 90, Fleet Street.*]

The writer would suggest that every householder should secure for his use the rain poured down upon his house. At present, few persons store more than one barrel-full, and the rest is allowed to run to waste down into the sewers, or to soak into the site of the house. If every house had three large barrels side by side, communicating, or a large tank, or a series of tanks, the amount of water that could be stored would be of great benefit. Raised on bearers so that the contents could be drawn at a tap, and kept clear of walls, only a channel to the nearest sink would be necessary to prevent damp. A short length of pipe passed from them through a wall to an inside sink proves an excellent plan. If underground tanks should be chosen, they must be furnished with pipes to conduct the overflow to the nearest suitable destination. There should be no direct communication with sewers in any case.

CHAPTER VIII.

COMMON LODGING-HOUSES AND CELLARS.

The duty of registering lodging-houses does not belong to the inspector, but as the Local Authority cannot register such premises until they have been inspected and approved for the purpose by one of their officers, it follows he is soon brought into close relations with them. The bye-laws that the Act requires each Local Authority to make concerning the common lodging-houses in its district, relate to the undermentioned subjects :—

- (1.) For fixing and, from time to time, varying the number of lodgers who may be received into a common lodging-house, and for the separation of the sexes therein ; and
- (2.) For promoting cleanliness and ventilation in such houses ; and
- (3.) For the giving of notices and the taking precautions in the case of any infectious disease ; and
- (4.) Generally, for the well ordering of such houses.

The model bye-laws issued by the Local Government Board give the following guidance to the inspector for his examination previous to the registration :—

The house should (1) possess the conditions of wholesomeness needed for dwelling-houses in general ; and (2) it should further have arrangements fitting it for its special purpose of receiving a given number of lodgers.

(1.) The house should be dry in its foundations, and have proper drainage, guttering, and spouting, with properly laid and substantial

paving to any area or yard abutting on it. Its drains should have their connections properly made, and they should be trapped where necessary, and adequately ventilated. Except the soil pipe from a properly trapped water-closet, there should be no direct communication of the drains with the interior of the house. All waste pipes from sinks, basins, and cisterns should discharge in the open air over gullies outside the house. The soil pipe should always be efficiently ventilated. The closets or privies, and the refuse receptacles of the house, should be in proper situations, of proper construction, and adapted to any scavenging arrangements that may be in force in the district. The house should have a water supply of good quality, and if the water be stored in cisterns they should be conveniently placed, and of proper construction, to prevent any fouling of water. The walls, roof, and floor of the house should be in good repair. Inside walls should not be papered. The rooms and staircases should possess the means of complete ventilation; windows being of adequate size, able to be opened to their full extent, or, if sash windows, both at top and bottom. Any room proposed for registration that has not a chimney should be furnished with a special ventilating opening or shaft, but a room not having a window to the outer air, even if it have special means of ventilation, can seldom be proper for registration.

(2.) The numbers for which the house and each sleeping-room may be registered will depend partly upon the dimensions of the rooms and their facilities for ventilation, and partly upon the amount of accommodation of other kinds. In rooms of ordinary construction to be used for sleeping, where there are the usual means of ventilation by windows and chimneys, about 300 cubic feet will be a proper standard of space to secure to each person; but in many rooms it will be right to appoint a larger space, and this can only be determined on inspection of the particular room. The house should possess kitchen and day room accommodation apart from its bedrooms, and the sufficiency of this will have to be attended to. Rooms that are partially underground may not be improper for day rooms, but should not be registered for use as bedrooms. The amount of water supply, closet or privy accommodation, and the provision of refuse receptacles, should be proportionate to the numbers for which the house is to be registered. If the water is not supplied from works with constant service, a quantity should be secured for daily use on a scale, for registered inmates, of not less than ten gallons a day where there are water closets, or five gallons a day where there are dry closets. For every twenty registered lodgers a separate closet or privy should be required. The washing accommodation should wherever practicable be in a special place, and not be in the bedrooms; and the basins for personal washing should be fixed, and have water taps and discharge pipes connected with them.

The standard of accommodation suggested by the model bye-laws (but which will vary in different

localities and accord with local regulations, which must be consulted for guidance and action in every particular case) consists of a separate bed for each male who is upwards of ten years of age, with sufficient bedclothes and necessary utensils. No bed should be occupied before eight hours have elapsed since the previous occupant vacated it. And all the bedclothes as well as the bed should be freely exposed to the air for an hour in the forenoon, or an hour in the afternoon, after it has been vacated by any lodger. Every two children under the age of ten years may be counted as one lodger. No person of the female sex above ten years of age is to occupy a sleeping apartment used by persons of the male sex above ten years of age, except in the case of man and wife. Every sleeping apartment intended for two or more married couples is to be furnished with screens or partitions the length and breadth of each bed, and of sufficient height to ensure that the occupants of it cannot be overlooked from any other bed. All bedsteads, bedding, and bedclothes are to be kept in a clean and wholesome condition. A sufficient number of basins of adequate capacity, and a sufficient supply of water and towels must be furnished and kept in good order. All slops and refuse should be removed from each room before the hour of ten in the forenoon, and all the utensils thoroughly cleansed. The seat, floor, and walls of every water-closet, earth-closet, or privy, belonging to the house is to be thoroughly cleansed sufficiently often to keep all in a wholesome condition. The drains must be kept in good and efficient action. No wet filth or refuse should be thrown into the ash-pit, which is intended only as a receptacle for ashes, dust, and dry refuse. And every window in every sleeping apartment, not occupied at the time, should be opened for at least an hour in the morning and another in the afternoon, weather permitting.

An Authority can require a common lodging-house keeper to affix on the outside of his house a notice with the words "Registered Common Lodging-house," in a prominent position. And if the keeper should refuse or neglect to affix or renew the notice when effaced, he is liable to a penalty not exceeding five pounds; and a further penalty of ten shillings a day whilst such neglect continues. A penalty not exceeding five pounds, and a further penalty not exceeding forty shillings for every day during which the offence continues, are attached to particular offences by keepers of houses, enumerated in Section 86 of the Act, thus set out:—(1) Any keeper who receives any lodger in such house without the same being registered under this Act; (2) any keeper who fails to make a report, after he has been furnished by the Local Authority with schedules for the purpose in pursuance of this Act, of the persons resorting to such house; (3) any keeper who fails to give the notices required by this Act where any person has been confined to his bed in such house by fever or other infectious disease.

A Local Authority can require, if they please, the keepers of lodging houses in which beggars or vagrants are received to report to any person they may direct to receive the information, every person who has resorted to the house during the preceding day or night, for which purpose they may issue schedules for the keeper to fill up and transmit to them.

Breaches of the various regulations are sometimes endeavoured to be excused on the ground that the parties concerned are members of the same family. Section 87 declares the burden of proving such allegation shall lie on the persons making it.

In country places Authorities do not always insist upon the registration of small houses where lodgers are taken. These are always kept extremely clean,

and are supposed to be used by working men employed in the neighbourhood. They are open to inspection, and the least departure from sanitary conditions would be immediately noticed and acted upon. Even the Authorities of some small country towns hesitate to apply the model bye-laws to the small lodging-houses in them, because they consider they have been framed for the use of large towns. Some Authorities require lodging-house keepers to affix in a conspicuous place inside their houses a placard, given them for the purpose, which is generally a printed sheet of the bye-laws relating to them.

No cellar is now allowed to be occupied as a dwelling that was not already so occupied before the passing of the Act, and such cellar dwellings as were then existing are only allowed to be let or occupied on these conditions: they must be at least 7 feet in height, and at least 3 feet above the surface of the street or ground adjoining. It must have an open space, or area, along the whole front of it at least 2 feet 6 inches in width, which areas must rise from 6 inches below the level of their floors up to the surface of the street or ground, and they must be drained by means of drains laid at least 1 foot below the level of the floor. Further, every cellar so let must have its water-closet, or earth-closet, or privy, and ashpit, a fireplace and chimney, and a window of at least 9 superficial feet clear of the sash-frame. Any steps that may be necessary for access to these cellar dwellings, or to the buildings above them, must not be across or opposite the windows, or within 6 inches of it. Anyone who knowingly lets a cellar, or allows it to be occupied without these provisions, is liable to a penalty of twenty shillings for every day it continues to be occupied after notice in writing. Should any person

pass the night in a cellar, it is to be considered occupied as a dwelling.

When an inner or back kitchen is let and occupied along with the front one, the external window of it must not be less than 4 feet in superficial area, clear of the sash-frame. A cellar dwelling may be closed temporarily, or altogether, on obtaining two convictions within three months. See Section 75 of the Act.

The model bye-laws as to common lodging-houses suggest to Local Authorities to rule that "a keeper of a common lodging-house shall not at any time cause or suffer any room which may be appointed for use as a kitchen or scullery to be used or occupied as a sleeping apartment."

The sections of the Act especially applicable to Rural Sanitary Authorities are Sections 82, 83, 84, 85, 86 and 88. These, as already indicated, require the walls and ceilings of a common lodging-house to be limewashed on the first week of the months of April and October; the keeper to report every person who resorts to the house, if required to do so; the keeper to give notice to the medical officer of health and to the poor law relieving officer when any person in the house is ill of fever or infectious disease; and the keeper to give free access at all times to any officer of the Local Authority. Further, no keeper of a common lodging-house is to receive any lodger unless his house is registered under the Act; he is not to fail to make report of the persons lodging with him after he has been furnished by the Local Authority with schedules for the purpose; and he is not to fail to give notice when a person has been confined to his bed in his house by fever or other infectious disease, under penalty, not exceeding five pounds; and in the case of a continuing offence under further penalty, not

exceeding forty shillings. Finally, when the keeper of a common lodging-house is convicted of a third offence against the provisions of the Act, the Court may adjudge that he shall not continue to keep his house without the previous license in writing of the Authority, for the period of five years, or less, which license the Authority may withhold or grant on such terms as they think fit.

CHAPTER IX.

HOUSES UNFIT FOR HUMAN HABITATION.

SECTION 97 gives the following order of prohibition in the case of houses unfit for habitation :—

“Where the nuisance proved to exist is such as to render a house or building, in the judgment of the Court, unfit for human habitation, the Court may prohibit the using thereof for that purpose until, in its judgment, the house or building is rendered fit for that purpose; and on the Court being satisfied that it has been rendered fit for that purpose, the Court may determine its previous order by another, declaring the house or building habitable, and from the date thereof such house or building may be let or inhabited.”

The question may be asked, What constitutes unfitness for human habitation?

When a house, and the rooms in it are dark, damp, low, ruinous, decaying, with bad walls and floors and roofs, and accumulations of soil against them, and have ash-middens built against them, enabling the moisture in them to soak through, or have stables, or cow-byres, or pig-sties joined on to them to such an extent as to make them unwholesome, or have only a selection of these unsanitary conditions, they must be eyed with deep condemnation.

In rural districts cottages are often found under the same line of roof-top as the stables and cow-byres. The floors are roughly paved with large, uneven and defective stone flags, or with soddened bricks, or by tiles more or less broken. The walls are wet and

bulging. The rain comes in at the roof, and perhaps at the windows, and under the door as well. The wind whistles aloud. There is no ceiling, and the rafters are only concealed by calico drawn across them, which contrivance the cottager's wife can manage herself. And there are always two, and often three, doors opening into the one room, which serves for the sleeping apartment as well as kitchen and parlour. Such a cottage as this is unfit for human habitation.

In country towns there are alleys or openings by the side of houses fronting the streets, to spaces in the rear of them, formerly gardens, in which every available bit of ground has been covered over with tenements. A room thrown out here, and another run up over it some other time, and a couple more thrown out there, all dilapidated, and all with but little light, no water, and no ventilation, with the ash-pits and cesspools of the neighbouring houses to the right and to the left of them, form another class of home unfit for human beings. The mediæval towns in the Midland counties have scores of these tenements at the back of their picturesque streets.

In large towns there are the cellar dwellings to look after; the back kitchens let as family residences; the lofts over stables in mews; the attics where there are no fireplaces, insufficient cubic space per occupier, and scanty ventilation, full of workpeople busy at light crafts; the bakehouse with a bed in it; and others, highly prejudicial to health, and consequently unfit for use.

Sometimes the owners of cottages will prefer to pull them down altogether instead of repairing them. Sometimes, out of (mistaken) charity, he will allow people to live in them rent free, who are difficult to evict on their condemnation as unfit, as the following letter will show:—

SIR,—In reply to your notice, I beg to inform you that previous to Mrs. Millar being let into my cottage it had been shut up by my orders as unfit for habitation for three years. My sister informs me the said person entreated her to allow her to go into it for a week or two till she got a house. I have sent notice through my sister to inform her that she must go out, which has been repeatedly done before, but she will not go out. She pays nothing for it. I do not intend to do anything to the house, nor do I wish it to be occupied. Should she still persist in remaining, will you kindly inform me what steps would be necessary to get her out.

Yours faithfully,
T. S.

T. S. was advised to apply to a magistrate for an order of ejectment.

In most localities there are now bye-laws in operation which prevent buildings from being erected in too close proximity. But owners of small plots have been known to run up small houses upon them whilst the necessary negotiations with the Local Government Board concerning these bye-laws have been pending, so as not to be amenable to them.

In the case of a new building erected since the 24th April, 1876, the certificate of the medical officer of health, or of the surveyor, or of the inspector of nuisances that it is unfit for human habitation, is sufficient, according to some local bye-laws, to enable the Authority to cause a notice to be served upon the owner or occupier requiring either of them to discontinue its habitation, under a penalty of twenty shillings a day for the time it is occupied after the notice has been served, subject to any diminution the Court, before whom any complaint is made, deems desirable.

CHAPTER X.

INFECTIOUS DISEASES AND DISINFECTION.

SECTION 120 of the Public Health Act, 1875, gives a Local Authority power, on the certificate of their medical officer of health, or on that of any qualified practitioner, that the cleansing and disinfecting of any house, or part thereof, and of any articles therein likely to retain infection would tend to prevent or check infectious disease, to give notice in writing to the owner or occupier of such house, or part thereof, requiring him to cleanse and disinfect such house, or part thereof, and articles within a time specified in such notice. If the person to whom notice is given does not comply with it he is liable to a penalty of from ten shillings to one shilling a day, and the Local Authority can do the said cleansing, and recover the expense from the owner or occupier. Where the owner or occupier of any such house or part thereof is from poverty or otherwise unable, in the opinion of the Local Authority, effectually to carry out the requirements of this section, the Authority may, without enforcing such requirements on such owner or occupier, *with his consent*, cleanse and disinfect such house or part thereof and articles, and defray the expenses thereof. Section 121 gives a Local Authority power to direct the destruction of any bedding, clothing, or other articles which have been exposed to infection from any dangerous infectious disorders, and states they *may give* compensation for the same. The next sections give the power to provide a proper place for the purpose of disinfection, and to provide and main-

tain a carriage for the conveyance of persons suffering from an infectious disorder to a hospital or other place of destination. Persons sick of infectious illness, without suitable lodging, or only in a common lodging-house, or on board a ship, may, on the certificate of a qualified medical man and the order of any justice, be removed to a hospital (with the consent of its governing body).

An action was recently brought at the Dorking County Court, before A. Martineau, Esq., Judge, by Mr. Hugh Fergusson, against Mr. R. F. Nurthen, chemist, 390, Strand, for certain dilapidations, rent in lieu of notice, also for cleansing and disinfecting premises, bedding, &c., whilst a lodger in the plaintiff's house at South Holmwood. It appears as soon as Mr. Nurthen became the occupier of the plaintiff's furnished house, his children fell ill with scarlet fever. Directly they recovered they left the premises, and the Dorking Union caused notices to be served upon the plaintiff for the cleansing and disinfecting of the house and its contents. He carried out this work to the satisfaction of the Authority, and called upon Mr. Nurthen to reimburse him the amount, as well as pay him two weeks' rent in lieu of notice. The Judge ruled that as he could find nothing in the Public Health Act to decide who is to bear the expense, he must look at the case from the law as to landlord and tenant, in which it was the duty of the occupier having scarlet fever to be at the burden of disinfecting the premises, and leaving them in the same condition as he found them. The claim for rent was disallowed, on the score that the understanding that he might leave at any time entitled him to do so without notice, but the defendant had to pay 12*l.* 9*s.* for the disinfection expenses, with the usual costs.

The provision in Section 120, which states where, from *poverty or otherwise*, the owner or occupier is

unable to carry out the requirements, the Authority, with his consent, can defray the expenses thereof, did not apply. If the driver of a public conveyance conveys an infected person in his vehicle without causing it to be disinfected immediately after it has come to his knowledge that the person so conveyed was suffering from an infectious disease, he is liable to a penalty not exceeding five pounds. He cannot be required to convey any person so suffering until he has been paid a sufficient sum to reimburse him for the expense attending the disinfection of his vehicle.

A memorandum of Privy Council intended for the assistance of health authorities states every village aiming at proper resources within itself should have the means of accommodating at least four cases of infectious disease, either instantly, or at a few hours' notice. A four-roomed or six-roomed cottage would answer this purpose. Or an arrangement is suggested to be made with trustworthy cottage holders to receive and nurse patients in case of need.

In towns, there should be not less than four rooms in two separated pairs, so as to afford provision for two different diseases, and for men and women to be housed apart. In large towns the hospital should have space enough around it for temporary structures to be added in seasons of emergency. For this extension huts, or, in summer and autumn, tents, are considered likely to answer the purpose. In huts the 2000 feet cubic space and 144 square feet of floor of permanent buildings should be maintained. The floor should be a foot and a half from the earth with a free under passage of air. There should be a window to each pair of beds that will open top and bottom, and a ventilating opening beneath the ridge with movable flats that can be closed in high winds. The hut should be warmed by open fire-places fixed in brick stove-stacks. Both huts and tents should be trenched.

Tents should have boarded floors, and the approaches to them paved so that they are not trodden into mud. There should be but one person in a bell tent of the regulation size (diameter, 14 feet ; height, 10 feet ; area of base, 54 square feet ; cubic space, 513 feet) ; and not more than 3 patients in a hospital marque of the regulation size (length, 29 feet ; width, 14 feet ; side walls, 5 feet 4 inches ; height to ridge, 11 feet 8 inches ; cubic capacity, a little over 3000 feet).

The sewerage and scavenging arrangements both of tents and huts demand very careful consideration. When the tents or huts are placed within the area of a public system of sewerage and water supply, no difficulty will arise, for drains may be laid into the public sewer, and water-closets may easily be adopted. But where no system of sewerage exists, the disposal of excremental matters and other refuse will require special provisions. In regard to excrement disposal under the circumstances, the best method to adopt is the dry earth system, or failing this, a pail system with careful arrangements for the disinfection and subsequent disposal of the excrementitious matter. (See the Departmental Report "On certain means of preventing Excrement Nuisances in Towns and Villages.") All slops and other refuse should be deposited in metal pails, and removed from the tents and huts at frequent intervals, and so disposed of as not to become a nuisance. Too much attention cannot be given to the careful scavenging of tents and huts, and to the proper disposal of the refuse from them ; and the servant or servants to whom the duty is assigned should be under very vigilant supervision.

Cholera is understood to have a peculiar infectiveness of its own. In 1871, the Privy Council published a memorandum of precautions to be taken against the infection of cholera, which was then prevailing in foreign ports within a week's journey of this country. They urged the importance of maintaining the sanitary arrangements of the country in such perfection that the disease should not be able to obtain any hold upon the population. Water and the air are the two chief sources or channels of contagion, for the following reason, which will be best given in the words of Dr. Simon, of the Medical Department of the Privy Council Office :—

It is characteristic of cholera, not only of the disease in its developed and alarming form, but equally of the slightest diarrhoea which the epidemic influence can cause, that *all matters which the patient discharges from his stomach and bowels are infective*, and that, if they be left without disinfection after they are discharged, their infectiveness during some days gradually grows stronger and stronger. Probably, under ordinary circumstances, the patient has no power of infecting other persons except by means of these discharges, nor any power of infecting even by them, except in so far as *particles of them are enabled to taint the food, water, or air which people consume*. Thus when a case of cholera is imported into any place, the disease is not likely to spread, unless in proportion as it finds, locally open to it, certain facilities for spreading by indirect infection. In order rightly to appreciate what these facilities must be, the following considerations have to be borne in mind; first, that *any choleraic discharge cast without previous thorough disinfection into any cesspool or drain, or other depository or conduit of filth, infects the excremental matters with which it there mingles*, and probably to some extent the effluvia which those matters evolve; secondly, that the infective power of choleraic discharges attaches to whatever bedding, clothing, towels, and like things have been imbued with them, and renders these things (if not thoroughly disinfected) as capable of spreading the disease in places to which they are sent (for washing or other purposes), as, in like circumstances, the cholera patient himself would be; thirdly, that if by leakage or soakage from cesspools or drains, or through reckless casting out of slops and wash-water, any taint, however small, of the infective material *gets access to wells, or other sources of drinking water*, it imparts to enormous volumes of water the power of propagating the disease. When due regard is had to these possibilities of indirect infection, there will be no difficulty in understanding that even a single case of cholera, perhaps of the slightest degree, and perhaps quite unsuspected in its neighbourhood, may, *if local circumstances co-operate*, exert a terribly infective power on considerable masses of population.

Until we know more of the cause of this mysterious visitant, we can but maintain the efficiency of all sanitary regulations; examine sources of water-supplies, especially wells, with strictest scrutiny; remove all refuse from houses and the neighbourhood of houses; wash and lime-wash all uncleanly places; disinfect drains, sinks, sewers, all receptacles of filth, and any filth-soddened earth round about houses.

There are many disinfectants. For the last three years the management of the Smithfield Club Show

at the Agricultural Hall, Islington, has used a new disinfectant called Sanitas with singular success. Instead of the previous pig-odour there was nothing more disagreeable to the smell present on these occasions than the resinous scent of pines. This disinfectant and deodorizer is manufactured by the atmospheric oxidation of turpentine. It is an attempt to procure by artificial means and commercial enterprise the salutary and curative qualities found in the atmosphere of the pine groves of Bournemouth and Arcachon. After a series of experiments Mr. Kingsett found the health-giving properties common to groves of pines and blue gum-trees consisted in the evolution of peroxide of hydrogen, camphoric acid, and other camphoraceous bodies caused by the volatilization of naturally secreted oils, and, assisted by Mr. Maximilian Zingler, succeeded in manufacturing, by the aid of steam, water and turpentine, the product, called Sanitas. It is considered a powerful disinfectant and a strong antiseptic, and it has the advantage over some others of not being poisonous, or destructive. To disinfect an apartment with Sanitas, "the walls of the apartment should be stripped of their paper, and this burnt in the grate of the same room. A whitewash should then be made from the Sanitas powder and water, and the walls and ceiling whitewashed with the mixture. The floors should be scrubbed with Sanitas fluid No. 2 diluted ten times with water, using also Sanitas Disinfecting Soap, or Sanitas Soft Soap. All furniture should be polished with the Sanitas furniture cream. Ventilation will do what else is required."

The process of boiling is a complete disinfectant for linen, though for the security of those who have to handle it for this purpose, it should be disinfected by being steeped in some disinfecting fluid the moment

it is removed from the patient. The Sanitas Company recommends their fluid No. 2 diluted with its own bulk of water for this purpose.

We have also

- Carbolic acid ;
- Carbolate of lime ;
- Chloride of lime, in powder ;
- Solution of chloride of lime ;
- Condy's fluid ;
- Chloralum ;
- Dry earth and ashes ;
- Charcoal ;
- Quick lime ;
- Perchloride and sulphate of iron ;
- Chlorine and bromine ; and
- Sulphurous acid gas.

Some of these are more suitable for certain purposes than others.

Phosphorus has been recommended as an ozonizer, but it has the disqualification of having a tendency to rot the jaw-bones. Excess of ozone has its drawback, too ; for it causes colds, bronchitis and congestion of the lungs.

Frazer's portable disinfecting apparatus is a clever contrivance. It resembles a caravan externally, being a one-horse van with a stove-pipe rising out of it. Below is a receptacle, or furnace, for a fire. Within, it is fitted with shelves on which the infected articles are to be placed. The manufacturers state : "This apparatus can be taken to the infected house or district, and bedding, clothing, or other articles disinfected at once. The fire in the small furnace underneath is lighted, and the temperature of the chamber raised quickly to 300° Fahrenheit. The articles are then placed outside, the door closed, and in from 1 to 2 hours disinfection is complete. One great feature in this apparatus is the security with which

disinfection may be carried on, as the whole of the fumes given off are passed at once through the furnace and destroyed. It can therefore be used without risk in any crowded neighbourhood." The same patentee has a special apparatus for large districts and parishes. This is a covered iron hand-cart on two wheels, in which the articles are collected and taken to a furnace-chamber (to be erected on any convenient site) when they are disinfected by a current of hot air, impregnated with sulphur or other disinfectant at discretion, and returned to their owners without removal from it. He claims for this contrivance the merit of thorough destruction to any contaminating particles, in consequence of all vapours given off during the process having to pass through the fire. A third apparatus is designed for hospitals, infirmaries, &c. This is a brick chamber furnished with shelves, with a furnace extending under it. The clothes or bedding are brought to the chamber and, placed on the shelves, the doors are closed and a current of air heated to 250° or 275° Fahrenheit, impregnated with sulphur, or not, passes through, and as in the other apparatus, the vapours are conducted through the fire, and so prevented from contaminating the external air.

Speaking of "empoisonments of air," Bacon says, "Out of question such smell consists of man's flesh or *sweat putrefied*. There may be great danger of such compositions in great meetings of people within houses, *for poisoning of air is no less dangerous than poisoning of water*. And these empoisonments of air are more dangerous in meetings of people, because the muck breath of people doth further the reception of the infection."

It has been doubted whether infection can take place at a distance greater than six feet from the infected person, or article, especially if the healthy

person keeps out of the current of air passing from the sick person. Thus, a healthy person should not stand between a sick bed and the fire-place. But, very little is known of the mysterious laws of contagion, notwithstanding the efforts that are made to pierce the secret of the ways of their workings. Contagion is supposed to be in the excreta in cholera; in the emanations from the lungs, skin, and excreta in typhus-fever and exanthematous diseases; and in the exuviae of the skin in scarlet fever. We only know for certain that all "empoisonments of air" are dangerous to health, and that contagion will be kept within bounds in proportion as we arrive at purity of atmosphere, water, and diet, combined with personal and household cleanliness.

The writer's experience of fever, as inspector, is that it is almost always to be accounted for by its surroundings. Two children had scarlet-fever in a room where the fire-place was adjoining a large manure heap. A whole family had typhus-fever in one small low one-roomed cottage where the eaves touched the rising earth on the north side, and they all drank water from a well in a small yard at the back of the house. Two cases of fever occurred in a cottage where the accommodation was very scanty, and the sides of bacon hung from the rafters close to the box-beds where the sick lay. And not to make too long a list, similar crowding and deficiencies are *nearly* always present. On the other hand, the cause of a visitation *sometimes* baffles the keenest scrutiny made with our present measure of knowledge.

Dr. Davies, of Bristol, advocates pure chlorine gas, evolved from a mixture of common salt, binoxide of manganese, and sulphuric acid, for the disinfection of rooms, after first closing the windows, fireplace, and crevices; also an apparatus called an asphyxiator, by which sulphurous acid gas is forced into a room, or conveyance, or oven.

CHAPTER XI.

SLAUGHTER-HOUSES.

As it is possible that an inspector for a rural district acting as a surveyor for any thriving village in it endowed with "urban powers," may be called upon to build a slaughter-house, a specification embodying the chief requisites in a structure of the kind may be found useful. There is no reason why the outline of the building should not present a neat, if not ornamental, aspect. The materials would differ according to the locality, as bricks would be cheaper than stone in some places, and stone be cheaper than any other material elsewhere. Slates and tiles are equally interchangeable, as well as flooring or paving materials. The small kidney-shaped stones sometimes used for paving are not suitable for this purpose, on account of the soakage into the earth between them.

Section 169 states "Any urban authority may, if they think fit, provide slaughter-houses, and they shall make bye-laws with respect to the management and charges for the use of any slaughter-houses so provided. For the purpose of enabling any urban authority to regulate slaughter-houses within their district the provisions of the Towns Improvement Clauses Act, 1847, with respect to slaughter-houses shall be incorporated with this Act. Nothing in this section shall prejudice or affect any rights, powers, or privileges of any persons incorporated by any local Act passed before the passing of the Public Health Act, 1848, for the purpose of making and maintaining slaughter-houses." Again, Section 170 states, "The

owner or occupier of any slaughter-house licensed or registered under this Act shall, within one month after the licensing or registration of the premises, affix, and shall keep undefaced and legible on some conspicuous place on the premises, a notice with the words 'Licensed Slaughter-house,' or 'Registered Slaughter-house,' as the case may be. Any person who makes default in this respect, or who neglects or refuses to affix or renew such notice after requisition in writing from the Urban Authority, shall be liable to a penalty not exceeding five pounds for every such offence, and of ten shillings for every day during which such offence continues after conviction."

A slaughter-house, or set of slaughter-houses, should consist of four parts:—a cattle yard with a place of deposit for manure; a fasting-house, or set of fasting-houses; a slaughter-house, or row of slaughtering-houses; and a meat yard. There should be an abundant supply of water.

The following specification details the various requisites in the construction of an ordinary slaughter-house in an ordinary urban district, such as a small country town:—

SPECIFICATION

Of Works to be executed in the erection of New Slaughter-houses in the high field near to St. Mary's Cross, for the A. Local Board of Health.

August 1881.

SEWER AND WATER CONTRACTOR—

Trenches.—Dig trenches for, fill in and ram for sewer and water pipes.

Depths.—The sewer pipes to be laid at a depth of 3 feet and the water pipes 2 feet.

Junctions to mains.—Make junctions to sewer and water mains in Cross Street.

9-inch pipe.—Lay down 9-inch glazed socketted vitrified earthenware pipes from main sewer in Cross Street carried forward to manhole A.

6-inch pipe.—Lay down 6-inch glazed socketted vitrified earthenware pipes from manhole A forward and along lines marked on the plans, with 6-inch socketted glazed pipe branch to manure pit.

Clay.—The pipes to be laid upon and bedded and jointed with clay, with all necessary bends, and junctions, and connections with gulleys.

Manhole.—Form manhole in 9-inch brickwork and cement, stone channel bottom, strong stone cover, and sunk ring to lift up by, laid level with surface of ground.

Patent gulleys.—Provide and set in cement No. 6, Clark's patent, gulleys, 12 inches by 8 inches, from D. Clark, Waterloo Foundry, Carlisle. Make good connection to drain and place in position shown on plan.

Stop-taps.—Provide and fix level with roadway a 2-inch Guest and Chrime's stop-tap, at junction with water main in Cross Street, with cover complete.

2-inch water pipe.—Lay down 2-inch cast-iron socketted water pipe forward from the main to the building where shown, the pipes to be coated with Smith's solution. Each length of pipe to weigh 1 qr. 14 lb. and to have junction or set-off cast 1 inch to 2 inches.

1-inch junction pipe—Taps.—Provide and fix No. 3 galvanised iron junctions and stand-pipes and stone, and $\frac{3}{4}$ brass cocks at walls of slaughter-houses where shown.

EXCAVATOR—

Excavate 15 inches.—Excavate 15 inches of soil from the entire site, level and fill up at the low end where directed, and wheel or cart away the remainder. Remove all hedges, roots, and other obstructions from the site.

Trenches.—Dig trenches for all foundations to the depths and widths shown, wheel or cart away the soil.

Foundations stepped.—The foundations to be stepped according to the fall of ground, and to sufficient depths to obtain a firm bottom.

MASON—

The foundation to consist of large flat bedded stones, well packed and filled with mortar, where the walls are stone, and with set-offs where the walls are brick or with stone at the option of the contractor. A 6-inch set-off to be to all the walls.

Walling.—Above the surface the walls to consist of good sound rubble work to contain through stones, three to every superficial yard of walling.

The stones to be not more than 12 inches in height and not less than 9 inches on the bed, principally tailing into the walls. Both faces to be carried at one time, and to be well-packed and filled with mortar and levelled throughout every 3 feet in height.

Copings.—The boundary walls and walls between hunger houses to have rough copings in large stones.

Dressed work—Throughs.—Provide and set jambs, heads, and sills to doors and windows, and all quoins in rough dressed masonry, including gate pillars. The large doors to have throughs the full thickness of the walls, four in each jamb. All other doors to have three throughs and the windows two throughs in each jamb. Door jambs for large doors to be checked for doors.

Threshold steps.—Provide and set thresholds to each of the doors, 10 inches by 7 inches. The step to large doors to be in three lengths.

Pointings.—The external and internal faces of the walls to be neatly pointed after they are built their proper heights and cleaned down. No pointing to be done in frosty weather.

Brick walls.—Build all the brick walls between the slaughter-houses the full heights and widths shown in 9-inch brickwork tied into the walls at each end in English bond, consisting of alternate courses of headers and stretchers. The mortar beds in no case to exceed $\frac{3}{4}$ inch of thickness. The whole to be neatly pointed for white-washing.

Stones in brick walls.—Provide and set stones in the brick walls in the gables for heads and sills for carcase beams to rest on, hollowed in the sills 9 inches thick, 1 foot broad, and 2 feet 3 inches long; three in each gable, where shown on the drawings.

Crooks and stones.—Provide and run in with lead to crook stones wrought-iron crooks for the large doors and gates. The pins to be $1\frac{1}{2}$ inch and crooks 9 inches long.

Killing-rings and stones.—Provide and fix No. 12 stones 2 feet 6 inches by 2 feet 6 inches by 16 inches, two in each floor of the slaughter-houses. Provide and fix No. 12 wrought-iron sunk rings, with bolts, nuts, and screws. The rings to be 1 inch thick and 4 inches diameter in the clear. The bolts to be $1\frac{1}{2}$ thick, the full thickness of the stone, and through to wood beam below.

Cattle rings.—Provide and securely fix, run in with lead, four cattle rings in each hunger house, 3 inches diameter, where directed.

Water trough.—Take up and reset water trough in the position shown, and make good to inlet and outlet drain and slope of approach. Take up if necessary existing retaining walls and fill up to new walls.

Floors.—Lay a bed 9 inches thick of broken stones or bricks, and lay cement floors thereon $1\frac{1}{2}$ inch thick throughout the slaughter-houses, hunger houses, and pig-killing house and manure pit, grooved and scored and with 6-inch fall outwards to doors in each case.

Cement.—The cement floor to consist of two parts crushed bricks and one part Portland cement. Provide and lay a cement passage-way 2 feet 9 inches wide from wall to kerbstone along the length of slaughter-houses and hunger houses formed as described for the cement floors. The same to have a channel 8 inches wide and 4 inches deep formed therein. Provide and set a kerb 12 inches deep and 5 inches wide.

Pot, flue, and fire-place.—Provide, build, and set a 50 gallon pot, with furnace doors, hearth, damper, flues, and chimney stack complete for the pig-killing house.

Ridges.—Provide stone ridges and hips wrought to pitch of roof and 7 inches on the side.

Cuttings.—The mason is to cut all holes and grooves required by himself and all the trades.

Beam filling.—Execute all beam filling.

Mortar.—The mortar is to be made from the best clod lime, to be mixed with clean sharp sand in the proportion of one-third lime to two-thirds sand.

Cover walls.—The mason is to cover up the tops of the walls with planks and straw in the event of a winter's storm overtaking the works.

Remove all superfluous rubbish at the conclusion of the works, occasioned by all the trades.

Provide all labour, cartage, materials, moulds, or whatever else may be required for the due performance of the works.

Provide all scaffolding, tackle, engines, of a good and sufficient description to insure the building and the workmen from injury.

The contractor is to be answerable for accident or damage to the workmen or the building complete in every respect.

Immediately on acceptance of tender the contractor is to commence and build the south and west boundary walls in order to enclose the site and protect the adjacent allotments while the rest of the works are proceeding.

CARPENTER AND JOINER—

Roofs.—Provide and fix the roofs as shown and according to the scantlings marked thereon, namely:—

Ribs of slaughter-house roofs, 11 inches by 4 inches.

Ribs of hunger house roofs to be 9 inches by 3 inches.

The ribs to be in long lengths, or if scarfed, the scarf to be upon walls.

Spars for all roofs, $3\frac{1}{2}$ by $2\frac{1}{2}$, fixed 16 inches centre and centre.

Valley rafters, 7 inches by 2 inches.

Wall plates, 6 inches by $1\frac{1}{2}$ inch.

Ridges, 6 inches by $1\frac{1}{2}$ inch.

Hip rafters, 6 inches by $1\frac{1}{2}$ inch.

Gutters.—Provide and fix gutter boards and bearers for the middle gutters, with drips and falls and tilting laths and boards.

Sarkings.—Provide and fix sarking 7 inches by 1 inch along ridges and eaves and over the whole of the tops and ends of the ventilators.

Nails.—The spars to be nailed with 5-inch spike nails to each rib.

The roof timbers to be left from the saw, not planed.

Louvre ventilators.—Provide and fix securely the louvred ventilating lights as shown. The framing to be $4\frac{1}{2}$ inches by $2\frac{1}{2}$ inches. The sill pieces or ribs 7 inches by $2\frac{1}{2}$ inches. The louvres to be 1-inch stuff and so placed that the lower edge of one fully covers the upper edge of the next, to prevent rain and snow blowing in.

Provide and fix rabbetted ribs for the glass 2 inches wide linings to skylights and sark gutters for the lead.

The timbers of the roof to be left from the saw not planed.

Carcase beams and rings.—Provide and fix at the time of building carcase beams wrought and planed round and smooth for rings to run on, 12 inches by 12 inches. To be 16 feet long each. Provide and place on the carcase beams rings of malleable iron 1 foot 3 inches in the clear and $1\frac{1}{2}$ inch diameter round in section. Four rings on each carcase beam in slaughter-houses and two in pig-killing house, twenty-six rings in all.

Meat racks.—Provide and fix meat racks, brackets, and hooks in the

slaughter-houses on two walls where shown. The brackets to be 9 inches by 2½ inches, projecting 1 foot 4 inches from face of wall passing through the walls, and with upright plate 9 inches by 2½ inches, 2 feet 3 inches long, bolted together with ½-inch bolts and nuts and screws. Eight brackets in each slaughter-house.

Hook-rails.—Fix hook-rails 3 inches by 2½ inches, planed and chamfered on edge.

Meat-hooks.—Provide and fix on the rails meat-hooks and plates of galvanized iron 5½ inches by ½ inch. Iron plates 3 inches by 2 inches and ½ inch thick, and screwed by four 2½-inch screws. Sixteen hooks in each slaughter-house, 112 in all.

Doors.—Provide and fix to crooks provided by the mason large doors to slaughter-houses and gates in yard of the sizes shown. The doors to be ledged, braced, and battened. Ledges and braces to be 9 inches by 1½ inch. Battens to be 7 inches by 1½ inch, grooved and tongued, and to have 2-inch half-round roll where the doors meet.

Doors to meat-yard.—Provide and fix door-posts 12 inches by 6 inches let into the ground 4 feet for doors to meat-yard.

Provide and fix gate-posts, wicket, and gate similar to those existing at Cross Street entrance end at the point marked B in the road and to the full width of the road, with hinges, lock, two keys, and fastenings to match.

Hinges.—Provide and fix wrought-iron hinges 2 feet 3 inches long of plate iron 2 inches by ½ inch, fixed by bolts and nuts at the hinge end through to ledge, and by 2-inch screws (one screw in each batten).

Bolts and locks.—Provide and fix 18-inch bolt at top and a 9-inch bolt at bottom, and a 10-inch wood plate lock with ring bow key to each large door.

Stay-bars.—Provide and fix 1-inch wrought-iron stay-bars and hooks let into stone with lead for slaughter-house doors.

Other door frames.—Provide and fix to all other doors frames 4½ inches by 3 inches let into threshold at bottom, and shoulder at heads to be not less than 6 inches, and fastened in the middle with two strong wall hooks, 5 inches, screwed to frames and driven into plugs each side.

The doors to be ledged, braced, and battened. Ledges and braces 9 inches by 1 inch. Battens 7 inches by 1½ inch, grooved and tongued.

Hinges.—Fix two of Martineau's patent hinges, 20 inches long, to each door with 1½-inch screw to head, and 1½-inch screws to tail.

Flush latches.—Each door to have a flush latch 9 inches long, and keep, fall, and catch.

Provide and set to each outer door a 10-inch wood plate lock with ring bow key.

Windows.—The windows to slaughter-houses to have frames and jambs 3½ inches by 2½, heads and sills 4½ inches by 2½ inches, let into walls 4 inches and rebated for shutters, middle bar 3½ inches by 1½ inch. Provide and fix, screwed to woodwork, ½-inch wrought-iron bars 4 inches apart.

Shutters.—Provide and hang shutters with 1-inch fold and ½-inch flap and hook and eye to fasten.

The windows to hunger houses to be similar, except without shutter.

Window frames in gables to be $3\frac{1}{2}$ inches by $2\frac{1}{2}$ inches, and louvres $\frac{1}{2}$ inch thick.

Lintels.—Provide and fix lintels to all openings. Lintels to large doors to be five deals 9 inches by 3 inches, bolted with cleats and four 1-inch bolts, nuts and screws rebated for door. The lintels for all other openings to be 11 inches by 3 inches for outer doors, 9 inches by 3 inches for inner doors, and 9 inches by 3 inches for windows. Each to have 6-inch bearing on walls.

Beam under killing-ring stones.—Provide and set a deal 9 inches by 4 inches checked out and laid and packed round about in ground under killing-ring stones in slaughter-houses. Form hole for bolt. Each to be 8 feet 6 inches long. No. 6 in all.

These may be of sound old wood-beams of other scantlings not less than the size specified instead, if preferred by the contractor, *i.e.*, old lintels or beams.

Timber.—The timber to be sound wood from Gefle or other Baltic ports.

Provide all timber, ironmongery, labour, cartage, materials, and scaffolding for the complete performance of these works.

SLATER—

Slates.—Cover the roofs with Welsh slates, second quality, strong, 20 by 10 or 18 by 10, laths $1\frac{1}{2}$ by $1\frac{1}{2}$, and nailed with copper nails 6 lb. per thousand, two to each slate. The lap to be 3 inches.

Pointing.—Well point the slates over the slaughter-houses.

The slates over the hunger-houses not to be pointed.

Bed and set the hips and ridge in cement.

Point the skewers and gable ends in cement.

Louvre ventilators.—The ends as well as roof of louvre ventilators to be slated.

Provide all materials, labour, and cartage.

PLUMBER—

Valleys.—Lay the valleys with 6 lb. milled lead 16 inches wide.

Middle gutters.—Lay the middle gutters with 6 lb. milled lead, with drips and falls and delivery to spout-head; average width 2 feet, and flashings 5 lb. lead 9 inches wide.

Lay 6 lb. lead 12 inches wide on roof and up sides under the slates all round the louvre ventilators and flashings 5 lb. lead 8 inches wide all round.

Lay a flashing under slates and on edge of each outer pane of skylights, 5 inches partly over edge of glass.

SMITH—

Spouting.—Fix $4\frac{1}{2}$ -inch cast-iron half-round spouting to the eaves of roofs where shown, not less than 4 lb. per lineal foot, jointed with $\frac{1}{2}$ -inch screw, bolts, and nuts, and bedded with white lead.

To be supported by wrought-iron brackets to be turned up the rafters 9 inches and screwed firmly with 2-inch screws, three to each bracket.

Each length of 6 feet spouting to have a bracket and one at each end.

Down-spouts.—Fix the down-spouts, of $2\frac{1}{2}$ -inch bore, with proper turned shoes, flanges, and swan necks. No. 4 pipe-heads to be fixed where shown.

The shoes to discharge into cement channel.

Paint.—The whole of the spouts to have two coats of paint and a third coat after they are fixed.

PAINTER AND GLAZIER—

Skylights.—Glaze the skylights with Hartley's rough plate glass $\frac{1}{4}$ inch thick in single panes, length and width shown. To be cut true and to fill the rebates and to be well puttied and cleaned off, and to be held by copper clips.

Paint.—All the doors and frames and window frames and all wood-work about louvre ventilators and meat-racks and brackets and outside lintels, and all gates, wickets, and posts to be primed and three times painted stone colour.

Paint all hinges and ironwork of doors and gates and bars to windows three times with black paint.

GENERAL CONDITIONS APPLYING TO ALL THE TRADES.

The contractor or contractors to perform the whole of the works in a substantial and workmanlike manner, with materials of the best description of their several kinds.

The surveyor to have power to reject any unsound material or defective workmanship.

The surveyor to have the power of making any additions or deductions without vitiating the contract, and the price of such additions or deductions to be assessed by him.

All disputes to be referred to the surveyor, whose decision shall be final and binding to all concerned.

The tenders will be accepted on the condition of the contractor or contractors agreeing to sign the drawings and specifications and conditions from which the tenders are made, and a legal contract prepared by the clerk to the Local Board.

Payments will be made on the certificate of the surveyor.

The works are to be commenced immediately after signing, and the boundary walls built first.

Time.—The whole of the works to be completed in three months. Extension of time to be allowed on account of stress of weather only.

The following local Bye-laws may be useful as indicating somewhat of the usual regulations:—

1. Every occupier of a slaughter-house within the said district shall cause such slaughter-house to be provided with an adequate supply of water and proper ventilation, and to be thoroughly whitewashed with

quick-lime at least four times in each year, viz. :—in the first week of the months of March, June, September, and December.

2. Every occupier of a slaughter-house shall provide and keep a sufficient number of tubs, boxes, or vessels properly constructed, with tight and close-fitting covers thereto, for the purpose of receiving and conveying away all manure, garbage, or filth, and shall in all cases, except as hereinafter provided, immediately after the killing and dressing of any cattle in such slaughter-house, cause all such manure, garbage, and filth to be placed in such tubs, boxes, or vessels, and shall cause such tubs, boxes, or vessels, together with their contents, to be removed once at least in every twenty-four hours, between the hours of eight o'clock in the evening and ten o'clock in the morning, to some proper place of deposit, until the Sanitary Authority shall by public notice appoint some place appropriate to this purpose, and then to such place : and he shall cause all the blood arising from the slaughtering of cattle to be put into separate tubs or vessels with close-fitting covers, and to be carried away from the slaughter-house without delay ; and he shall not permit such blood to flow into the channel, sewer, or open street. Provided always that he shall not allow any blood to be put into the same tubs or vessels in which manure, garbage, or other filth is put.

3. Every occupier of a slaughter-house shall cause all the tubs and vessels which are used for the removal of any manure, garbage, and filth, and all the tubs and vessels which are used for the removal of blood from such slaughter-house to be thoroughly emptied, cleansed, and purified immediately after being used for such removal ; and he shall cause the floor of such slaughter-house to be at the same time effectually scoured and cleansed ; and he shall cause the whole of the premises generally to be kept in such a condition that neither within the slaughter-house nor without it shall there be any offensive smell arising therefrom.

4. Every occupier of a slaughter-house shall remove or cause to be removed from such slaughter-house the hides and skins of any cattle that shall be slaughtered therein within two days next after such cattle shall have been slaughtered.

5. No occupier of a slaughter-house shall knowingly slaughter or suffer to be slaughtered therein any diseased or unsound cattle.

6. Every occupier of a slaughter-house, in case of any diseased or unsound cattle being brought to such slaughter-house, shall forthwith as soon as he shall have been informed of or shall have otherwise become acquainted with the fact give notice thereof to the inspector of nuisances.

7. No occupier of a slaughter-house shall build or permit any access or opening to any privy, dunghill, or middenstead from such slaughter-house to be made, or if now made to remain ; nor shall any such occupier permit or suffer any cattle or pigs to be kept in such slaughter-house, except for the purpose of being fasted previous to killing.

8. No occupier of a slaughter-house shall keep or retain any cattle

in such slaughter-house for a longer period than thirty-six hours previous to the slaughtering of the same.

9. No occupier of a slaughter-house shall keep any dog or permit any dog to be kept in such slaughter-house or premises.

10. Every occupier of a slaughter-house shall, on the request in writing of the Sanitary Authority, forthwith cause all repairs, which may be requisite for the purpose of keeping such slaughter-house in a cleanly and proper state, to be executed with all reasonable dispatch.

11. Every occupier of a slaughter-house shall allow the inspector of nuisances of the Sanitary Authority and the medical officer of health free access to every part thereof at any reasonable time when such inspector or medical officer shall demand admission for the purpose of inspecting and examining the condition of such slaughter-house, and with regard to the cleanliness, ventilation, and management thereof.

12. Every occupier of a slaughter-house within the said district, who shall in any respect offend against any of the foregoing bye-laws, shall be liable for every such offence to a penalty of five pounds; and in case of a continuing nuisance to a further penalty of ten shillings for every day during which such nuisance shall be continued after the conviction for the first offence.

Provided nevertheless that the Justices or Court before whom any complaint shall be made for a breach of any of the foregoing bye-laws for the Regulation of Slaughter Houses, may, if they see fit, reduce the amount of the penalty herein prescribed as they shall deem advisable.

CHAPTER XII.

STREETS AND BUILDINGS.

THE Metropolis has a Building Act of its own. In other urban districts all the public streets are under the control of the respective Urban Authorities, and any street that has been hitherto private property, when it has been sewered, levelled, paved, flagged, metalled, channelled, and in every respect made good and provided with the proper means of lighting, may be declared a public highway, provided its owner or owners do not object. All streets that are vested in the Local Authority are kept in repair by them, and they may insist upon *every* street being properly sewered, paved, and lighted. Besides having the power to declare private streets to be highways when sewered, &c., if the owners do not object, the Local Authority has power to require gas- and water-pipes to be moved when necessary ; power to purchase premises for improvement of streets ; power to regulate the street-line of buildings, power to make bye-laws respecting new buildings ; power to light their streets ; power to provide places of public recreation ; and power to provide clocks and fix them on or against any public building, and illuminate the dials of them at night.

The general drift of most of the local bye-laws is to secure a sanitary basis for all the new buildings in the land. Every person intending to build in most districts is required to deposit plans with the Authority of the district, showing the position and nature of the structure and of the mode by which it is intended to

be drained, and what provision is made for sewer ventilation. A street having a carriage road is, locally, required to be at least 36 feet wide, and to have a pavement on both sides at least one-sixth of its width. Even if the street be not 100 feet long it must be 20 feet wide. All materials used must be sound and suitable.

With respect to the structure of foundations, walls, roofs, and chimneys, for securing stability, and for sanitary purposes, and prevention of fire, the following local regulations may be suggestive :—

Every person erecting a New Building shall cause the foundations to rest on solid ground, or upon a sufficient thickness of good concrete, or upon other solid substructure.

Every person erecting a New Building shall cause every external and party wall of such Building to be constructed of brick, stone, or other hard and incombustible substances, properly bonded and solidly put together with good mortar or cement.

Every person erecting a New Building, the roof or gutter of which shall adjoin any other house or building, shall cause every external or party wall of such New Building to be carried up above such roof or gutter to form a parapet of not less than 15 inches in height, measured at right angles to the slope, and above the covering of such roof, or above the highest part of such gutter.

No person erecting a New Building shall cause any joist, beam, or other woodwork fixed in or upon any external wall, except a beam or bressummer and story-posts under the same, and frames of doors and windows of shops, to be brought within four inches at least of the external face of such wall.

Every person erecting a New Building shall cause the roof or flat of such Building, and every gutter, dormer, and other work or construction connected therewith, except the doors, door frames, windows and window frames of such dormer and other construction to be formed of or externally covered with incombustible materials.

Every person erecting a New Building shall construct every chimney or flue in connection with any wall of such Building in a suitable situation, of adequate dimensions, and with sound, suitable, and substantial materials. He shall cause every chimney to be carried up in brick-work, or stone-work all round at least four inches thick to a height of not less than three feet above the roof, flat, or gutter adjoining thereto, measured at the highest point in the line of junction with such roof, flat, or gutter. He shall not allow the brick-work or stone-work of any such chimney-shaft to be carried up higher above the roof, flat, or gutter, measured in the same way, than a height equal to six times the least width of such chimney shaft, at the level of such highest point in

the line of junction, unless such chimney-shaft be built with or bonded to another chimney-shaft not in the same line with the first, or be otherwise rendered secure. He shall not allow any timber or wood-work to be placed in any wall or chimney-breast nearer than 12 inches to the inside of any chimney-opening or flue, or within two inches from the face of the stone-work or brick-work about any chimney or flue where the substance of such stone-work or brick-work is less than nine inches thick, unless the face of the stone-work or brick-work be properly rendered. He shall not allow any wooden plug to be driven nearer than six inches to the inside of any chimney or flue. He shall not allow any opening to be made in any chimney or flue for any purpose. He shall not allow any pipe for conveying heated air or steam to be fixed in or against any wall of such Building nearer than six inches to any combustible materials. He shall not allow any pipe for conveying hot water to be so fixed nearer than three inches, or any pipe for conveying smoke or other products of combustion to be so fixed nearer than nine inches to any combustible materials.

The same local bye-laws require a sufficiency of space about new buildings to be left unbuilt upon to secure a free circulation of air, and although the amount of this space may differ in localities, the principle is the same :—

Every person erecting a New Building to be used as a dwelling-house shall provide in the rear, or at the side thereof, an open space exclusively belonging thereto, to the extent of at least 150 square feet, free from any erection thereon above the level of the ground ; and he shall cause the distance across such open space between every such building and the opposite property at the rear or side to be ten feet at least. If the Building be of two storeys in height above the level of such open space, he shall cause the distance across to be fifteen feet. If such Building be of three storeys in height, he shall cause the distance across to be twenty feet. If such Building be of more than three storeys in height, he shall cause the distance across to be twenty-five feet.

Whenever any open space has been left belonging to any New Building to which these Bye-laws apply, no person shall afterwards build on, or wholly or partially cover such open space, except in the case of alteration or re-erection of such Building, in which case the person altering or re-erecting such Building shall comply with the requirements of the preceding Bye-laws.

Every person erecting a New Building shall provide every habitable room therein with one window at the least, and he shall cause the total area of window or windows, clear of the sash frames, to be at the least equal to one-tenth of the area of every such room, and he shall cause every window to be so constructed that one-half at least shall be made to open, such opening extending in every case to the top of the window.

Every person erecting a New Public Building shall cause such building to be supplied with adequate means of ventilation.

Over and above these regulations any inspector having occasion to superintend building operations should bear in mind these every-day facts:—

No earth should ever lie against the walls of any building.

There should be a damp-proof course inserted above the foundations consisting of layers of slate well bedded in cement.

Every building must be efficiently spouted or it cannot keep dry.

There must be proper provision to carry away the rain water from the down-spouts; a proper provision for storing it, if required, in underground tanks, or otherwise.

Every house should be raised above the surrounding soil, so that moisture may not drain towards it, but away from it. And the site should be drained by draining tiles before building operations are commenced.

There must be gratings let into the walls below the floors for ventilation, or there will be dry rot.

Every external wall, in every exposed situation, should be stoothed. No wall north of the Humber should be left without this protection.

Hearthstones should be in one piece to prevent red hot cinder dust percolating through cracks, and they should have proper brick arches to rest upon.

Every house must have a water-closet, earth-closet, or privy (under a penalty of twenty pounds). If the former is chosen, it should be trapped and furnished with a ventilating pipe as high as the building in which it is placed.

Every drain-pipe, as elsewhere mentioned, from sinks, baths, and lavatories, should discharge in the open air on to a Blaydon gulley, covering the opening into the adjoining sewers.

CHAPTER XIII.

SALARIES OF INSPECTORS OF NUISANCES.

WITH respect to the momentous question of salary some valuable information has been collected by the authorities of Sleaford Union.

It appears that Authority desired to make a reduction in the salaries of some of their officers, and requested their Finance Committee to ascertain the amounts paid to persons fulfilling similar duties by other unions in the same county (Lincolnshire). This information was supplied to them by every union wholly or partly in the county, save Goole, when a special meeting passed a resolution for the reduction of the salaries of three of their officers, one of whom was the inspector of nuisances.

This was in March, 1880. At that date the Authority of Boston, with a population of 38,836, annually paid their inspector 150*l.*, who devoted only a part of his time to the duties of his office; the Authority of Bourne, population 19,981, paid their inspector 150*l.* for the whole of his time; that of Brigg, population 29,000, 130*l.*; that of Caiston, population 48,885, 156*l.*; that of Gainsboro', population 27,236, 100*l.*; Grantham, population 30,606, 180*l.*; Holbeach, population 19,334, 20*l.*; Horncastle, 23,757, 90*l.*; Lincoln, 52,290, 90*l.* (part time); Louth, 34,760, 250*l.* (whole time); Newark, 29,622, 140*l.* (whole time); Peterborough, 37,204, 60*l.* (part time); Sleaford, 25,834, 175*l.* (part time); Spalding, 23,186, 29*l.* (part time); Spilsby, 29,246, 178*l.* (whole time); Stamford, 17,821, 90*l.* (whole time); and the Authority

at Thorne paid 75% to their inspector for duties extending over a population of 17,011, which occupied *nearly* all his time. It will be observed that 250% per annum is the highest in the list; and 20% the lowest.

On forwarding information of their resolution to head quarters, the Authority received a reply to the effect that the deduction could not be effected without the consent of the three officers. After a prolonged correspondence, in which the chairman commented on the peculiarity that unions should have power to increase salaries, but not to decrease them, the Local Government Board declined to ratify the deductions. Thereupon the Committee recommended that the correspondence and their report should be printed and forwarded to the chairman of every Board of Guardians in England, with an invitation to each to concur in or endeavour to get these inconsistencies remedied by petitioning Parliament.

Meanwhile the following four letters forming the conclusion of the correspondence will be read with interest :—

No. 64,444 B—10th Aug., 1880.

Sleaford Union, 13th Sept., 1880.

Sir,—I have laid your letter of the 10th ult. before a meeting of the committee appointed by the Guardians of this Union for considering the salaries of their officers, and am requested to inquire :—

1. Whether we are to understand from that letter that Boards of Guardians are to consider the appointments of their officers to be *Life* appointments?
2. Whether salaries of officers are capable of variation in one direction only? The Local Government Board have sanctioned *Increase*. Are we to understand that they refuse or have no power to sanction *Decrease*?
3. What course is open to the Guardians of any Union who may desire, for any cause, to change one or more of their officers?
4. Under what clause, in what Act of Parliament, are the Guardians prohibited from reducing the salaries of their officers, with the sanction of the Local Government Board?

I have the honour to be, Sir, your obedient servant,

Signed, J. PEACOCK, *Chairman*.

The Secretary, Local Government Board,
Whitehall, S.W.

No. 81,445B—1880.

*Local Government Board, Whitehall, S.W.,
30th Sept., 1880.*

Revd. Sir,—I am directed by the Local Government Board to acknowledge the receipt of your letter of the 13th instant, and with reference to the enquiries therein contained to state :—

1. That the terms upon which the several officers of the Board of Guardians of the Sleaford Union hold office depend, in each case, upon the Regulations of the Board applicable to the particular office at the time of the officer's appointment.
2. That the Board are advised that it is not competent to the Guardians, even with the assent of the Board, to reduce the salary of an officer who holds office permanently without the consent of such officer.
3. That the Guardians, in the event of misconduct on the part of an officer entitled to hold office permanently, of so serious a kind as to render it, in their opinion, expedient that he should cease to hold office, should submit the circumstances to the Board accompanied by detailed particulars of the misconduct alleged ; and
4. That there is no especial enactment such as that referred to in the inquiry with which your letter concludes, but the matter is governed by the general law.

I am, Revd. Sir, your obedient servant,

J. R. ROTTON, *Assistant Secretary.*

To the Rev. J. Peacock, Chairman of the Board
of Guardians of the Sleaford Union, Fulbeck,
near Grantham.

No. 81,445 B—1880.

Sleaford Union, 11th October, 1880.

Sir,—I am desired by the Committee to acknowledge and thank you for your letter of the 30th ult., and to ask if you will be good enough to say which of the undermentioned offices would be considered by your Board to be "*permanent*" in the sense in which that word is used in the paragraph numbered "2" of that letter.

Offices referred to above :—

The Chaplain.
The Clerk to the Board.
The Clerk to the Assessment Committee.
The Clerk to the Sanitary Committee.
The Clerk to the School Attendance Committee.
The Vaccination Officer.
The School Attendance Officer.
The Sanitary Inspector.

I have the honour to be, Sir, your faithful Servant,

J. PEACOCK, *Chairman.*

The Secretary, Local Government Board,
Whitehall.

No. 89,533 B—1880.

*Local Government Board, Whitehall, S.W.,
27th October, 1880.*

Reverend Sir,—I am directed by the Local Government Board to acknowledge the receipt of your letter of the 11th instant, relating to the tenure of office of certain of the officers of the Sleaford Union, and, in reply, to state that the clerk to the Guardians and the chaplain of the workhouse are entitled to hold office upon the terms specified in Article 187 of the General Consolidated Order—namely, until they die, or resign, or be removed by the Board, or be proved to be insane to the satisfaction of the Board.

That Section 10 of the Statute 25 & 26 Vict. cap. 103, provides that the Union Assessment Committee shall employ the clerk or assistant clerk of the Board of Guardians as their clerk. Unless, therefore, there be an assistant clerk, the clerk will be entitled to be employed as clerk to the Assessment Committee as long as he continues to hold office of clerk to the Guardians.

That the clerk to the Guardians has no separate appointment either as clerk to the Rural Sanitary Authority, or clerk to the School Attendance Committee.

That the vaccination officer is entitled to hold office upon the terms specified in Article 5 of the General Order of the 23rd January, 1872—namely, “until he die, or resign, or be removed by the Guardians with consent of the Local Government Board, or by the Local Government Board.”

That the school attendance officer is entitled to hold office upon the terms specified in Article 7 of the General Order of the 14th of April, 1877, namely, “until he shall die, or resign, or be dismissed by the Local Government Board, or by the School Attendance Committee with the assent of the Guardians, or be proved to be insane by evidence which the Local Government Board shall deem sufficient.”

That the inspector of nuisances is entitled to hold office on the terms specified in the Order of the 11th of November, 1872—namely, “for such period as the Sanitary Authority or Authorities appointing him may, with the approval of the Local Government Board, determine; or until he die or resign, or be removed by such Authority or Authorities with the assent of the Local Government Board or by the Local Government Board.”

I am, Reverend Sir, your obedient servant,

J. R. ROTTON, *Assistant Secretary.*

To the Rev. J. Peacock, Chairman of the Board
of Guardians of the Sleaford Union, Fulbeck,
near Grantham.

It is against the law for an inspector of nuisances to endeavour to augment his salary by the acceptance of fees or rewards of any kind. Section 193 of the

Act is very explicit upon this point:—Officers or servants appointed or employed under this Act by the Local Authority shall not in anywise be *concerned or interested in any bargain or contract made with such Authority* for any of the purposes of this Act. If any such officer or servant is so concerned or interested, or, under colour of his office or employment, exacts or *accepts any fee or reward whatsoever* other than his proper salary, wages, and allowances, he shall be incapable of afterwards holding or continuing in any office of employment under this Act, and shall forfeit and pay the sum of *fifty pounds* which may be recovered by any person, with full costs of suit, by action of debt.

In conclusion, it should be noticed that Section 196 lays down that any officer or servant who fails to render accounts, deliver up vouchers, or pay over any moneys, or, within five days after written notice fails to deliver up all *books, papers, writings*, property, and things to the Local Authority when required, can be summoned before a justice, and by him committed to gaol, there to remain without bail till he does so deliver them up, provided the imprisonment does not exceed a period of six months.

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- | | | |
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|----|---|---------------|
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printed, paged, and bound best green vellum
extra, with Index | s. d.
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Form P. per quire 6 0

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Books to last 1 year for Weekly, and 2 years for Fortnightly Payments	} 15 lines on a page. {	7 6
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Books of 100, perforated, &c.	I	6
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Books of 2 quires...	10	6
" 3 "	14	0

1	Minute Book, fcap., 5 quires, rough calf, lettered "Sanitary Authority," &c. ditto demy	} <i>Rural</i>
2	Rough ditto, half-bound, fcap.	
3	General Ledger, fcap., 5 quires, rough calf, lettered "Sanitary Authority," &c. ditto demy	
3a	Parochial Ledger, fcap. " " "	
4	Petty Cash Book, half-bound " "	
10a	Half-Yearly Return to Local Government Board as to Salaries paid to Medical Officers of Health and Inspectors of Nuisances	} <i>Only.</i>
10b	Half-Yearly Financial Statement or Balance Sheet ditto in books	
10c	Parochial Half-Yearly Statement Precepts to Overseers. See Sec. 230	

PUBLIC HEALTH ACT, 1875.

Constitution of Local Government Districts :

Sched.

- III. *a* Requisition to Summoning Officer for a Meeting of Owners and Ratepayers
 „ *b* Security for Costs
 „ *c* Notice of Meeting in pursuance of such Requisition
 „ *d* Notice of Poll
 „ *e* Owner's Claim to Vote
 „ *e*^a Claim of Proxy
 „ *f* Voting Paper. *Form O in Schedule*
 „ *g* Notice of Adoption of Act or other result of Meeting

Election Forms :

- | | | |
|---|-----------------------------|-----------------------|
| II. <i>a</i> Owner's Claim, general form | } <i>Form L in Schedule</i> | |
| „ <i>b</i> ditto where Owner is also Occupier | | |
| „ <i>c</i> Claim of Proxy | | |
| „ <i>d</i> Objection to Name on Register | | |
| „ <i>e</i> Notice of Time for sending Claims and Objections, by Chairman | | |
| „ <i>f</i> Appointment of Proxy, general form. <i>Form M in Sched.</i> | | |
| „ <i>g</i> Register of Owners and Proxies (Index cut through) | | |
| | | in books of 500 names |
| | | 1000 „ |
| | | 1500 „ |
| | | 2000 „ |
| „ <i>h</i> Notice of Objection to Name on Register | | <i>Local</i> |
| „ <i>i</i> Notice of Election, by Returning Officer, large Placard in clear type | | |
| „ <i>j</i> Alphabetical List of Voters (books for) | | <i>Boards</i> |
| „ <i>k</i> Nomination Papers | | |
| „ <i>l</i> Notice of Withdrawal from Candidature | | |
| „ <i>m</i> Certificate of Election of Members without Poll | | |
| „ <i>n</i> Voting Papers. <i>Form N in Schedule</i> | | <i>Only.</i> |
| „ <i>o</i> Poll Books | | |
| „ <i>p</i> Collector of Voting Papers Books | | |
| „ <i>q</i> Notice of intention to send Agent with Collector of Voting Papers | | |
| „ <i>r</i> Certificate of Election of Members, after Poll | | |
| „ <i>s</i> Notice of Election to Persons Elected | | |
| „ <i>t</i> Declaration to be made by Members of Local Board before acting, in books | | |
- Sec. 8 *See Forms above, under Schedule II*
 „ 10 *See Forms under the Bakehouse Regulation Act, Artisan's and Labourers' Dwellings Act, 1875, Baths and Wash-houses Acts, and Labouring Classes Lodging Houses Acts*

Section of
Statute

SUBJECT OF FORM.

Sewerage and Drainage :

- 16 *a* Notice of intention to carry Sewer through lands within the District
 „ ditto without the District, *see Secs. 32, 34*
 21 *a* Notice of intention to drain into Sewer
 22 *a* Agreement for Drainage of Premises without the District
 23 *a* Notice to drain house into Sewer or Cesspool
 „ *b* ditto in books with counterpart
 „ Order declaring Expenses to be Private Improvement Expenses, *see Sec. 213*
 „ Notice of Apportionment of Expenses, *see Sec. 257*
 25 *a* Notice to drain new house into Sewer or Cesspool
 „ *b* ditto in books with counterpart
 „ Complaint, &c, *see Sec. 251*
 26 *a* Consent of Urban Authority to the erection of Building over Sewer
 „ *b* ditto to constructing Vault, &c., under Carriageway
 „ *c* Notice as to Building erected over Sewer
 „ *d* ditto as to Cellar, &c., constructed under Carriageway
 „ Complaint, Summons, Conviction, and Order for Recovery of Expenses, *see Forms under Secs. 251, 257*
 32 *a* Notice of intended Sewage Works
 „ *b* ditto in books with counterpart
 34 *a* Application to Local Government Board for appointment of Inspector

Urban
Only.***Privies, Waterclosets, &c. :***

- 35 *a* Complaint for erecting or rebuilding House without Privy, &c.
 „ *b* Summons
 „ *c* Conviction
 36 *a* Report that House is without Privy, &c.
 „ *b* Notice to provide Privy, &c.
 „ *c* ditto in books with counterpart
 „ Complaint, Summons, and Order for recovery of Expenses, *see Forms under Sec. 257*
 „ Order declaring Expenses to be Private Improvement Expenses, *see Sec. 213*
 38 *a* Surveyor's Report that House is used as Factory, &c.
 „ *b* Notice to provide Factory with Privies, &c.
 41 *a* Application for Examination of Drains, &c.
 „ *b* Authority to Surveyor or Inspector to enter Premises
 „ *c* Notice to Occupier of intended Examination of Drains, &c.
 „ *d* ditto to Execute Works
 „ Complaint, Summons, Conviction, and Order for recovery of Expenses, *see Forms under Secs. 251, 257*
 „ Order declaring Expenses to be Private Improvement Expenses, *see Sec. 213*

Section of
Statute

SUBJECT OF FORM.

Scavenging and Cleansing :

- 42 *a* Contract for Removal of House Refuse, Cleansing of Earth-closets, &c.
 „ *b* ditto for Cleansing Streets
 „ *c* ditto for Watering Streets
 46 *a* Medical Certificate as to Unhealthy House
 „ *b* ditto in books with counterpart
 „ *c* Notice to Whitewash or Cleanse Premises
 „ *d* ditto in books with counterpart
 „ Complaint, Summons, Conviction, and Order for Recovery of Expenses, *see Forms under Secs. 251, 257*
 47 *a* Complaint for keeping Swine so as to be a Nuisance
 „ *b* Notice to Remove Stagnant Water
 „ Complaint, Summons, Conviction, and Order for Recovery of Expenses, *see Forms under Secs. 251, 257* } *Urban Only.*
 48 *a* Complaint as to Offensive Ditch on boundary of District
 „ *b* Summons
 „ *c* Order
 49 *a* Notice to Remove Offensive Accumulation
 „ *b* ditto in books with counterpart
 50 *a* Notice for Periodical Removal of Manure : in clear type for private notice, or placard
 „ Complaint, Summons, Conviction, and Order for Recovery of Expenses, *see Forms under Secs. 251, 257* } *Urban Only.*

Water Supply and Waterworks Clauses Act :*See also Forms under Public Health (Water) Act, 1878, page 99.*

- 52 *a* Notice to Water Company
 53 *a* Application to Local Government Board for permission to construct Reservoir
 54 *a* Notice of Intention to carry Watermain through Lands within the District
 „ *b* ditto through Lands without the District
 „ *c* Application to Local Government Board, *as under Sec. 34*
 56 *a* Agreement for Supply of Water
 „ *b* Water Rate Book, *settled by Geo. Gibson, Esq., District Auditor*
 „ Demand for Water Rate, *see Form 256a*
 „ Receipt Book, *see Form 256f* } *[Rural Only]*
 57 *a* Notice of Intention to Break up Street (10 Vict. c. 17, s. 30)
 „ *b* Demand for Payment of Cost of Communication Pipes, &c. (Id., s. 46)
 „ *c* Notice of Intention to Lay Service Pipe (Id., s. 48)
 „ *d* ditto to Make Communication with Watermain (Id., s. 49)
 „ *e* ditto to Remove Service Pipe, &c. (Id., s. 51)
 58 *a* Agreement for Supply of Water by Meter

Section of
Statute

SUBJECT OF FORM.

Water Supply—continued.

- 62 *a* Report of Surveyor as to supply of Water to Houses
 „ *b* ditto in books with counterpart, *to order*
 „ *c* Notice to obtain supply of Water
 „ *d* ditto in books with counterpart
 „ *e* Contract with Water Company to supply Water
 „ Complaint, Summons, and Order for Recovery of Expenses, *see*
Forms under Sec. 257
 „ Order declaring Expenses to be Private Improvement Expenses,
see Sec. 213
 68 *a* Notice to discontinue Fouling Water with Gas Washings
 70 *a* Notice of Pollution of Water in Wells, &c.
 „ *b* Complaint as to Polluted Wells, &c.
 „ *c* Summons
 „ *d* Order
 „ *e* Summons to show cause why Authority should not be empowered
 to carry out Order
 „ *f* Complaint for Non-compliance with Order
 „ *g* Order authorizing Authority to carry out Order
 „ Complaint, Summons, and Order for Recovery of Expenses,
see Forms under Secs. 251, 257

Cellar Dwellings :

- 73 *a* Notice as to Cellar Dwellings improperly occupied
 „ Complaint, Summons, and Conviction, *see Forms under Sec.*
251
 75 *a* Order for Closing Cellar Dwellings

Common Lodging-Houses :

- 76 *a* Register of Common Lodging-houses ... in books of 1 quire
 „ „ „ „ „ 2 quires
 „ *b* Certificate of Entry in Register
 „ *c* Notice to Lodging-house Keeper to Register House
 „ *d* Application for Registration of Common Lodging-house
 78 *a* Certificate of Character
 „ *b* ditto of Approval of House by Officer, in books
 79 *a* Requisition to affix Notice to Common Lodging-house
 81 *a* Notice to provide Supply of Water
 83 *a* Schedule of Lodgers
 „ *b* Order to report Lodgers
 „ *c* Room Ticket (and Bye-laws)
 84 *a* Notice of Fever, &c.
 85 Complaint, Summons, and Conviction for refusing Access to
 Officer of Local Authority, *see Forms under Sec. 251*
 88 *a* License to keep Common Lodging-house after third Conviction

Section of
Statute

SUBJECT OF FORM.

Nuisances :

- 93 *a* Information as to Nuisance, general form
 „ *b* ditto as to Unhealthy Premises
 „ *c* ditto as to Foul Ditch, Drain, Privy, Ashpit, &c.
 „ *d* ditto as to Animal kept so as to be a Nuisance
 „ *e* ditto as to Accumulation or Deposit
 „ *f* ditto as to Overcrowded House
 „ *h* ditto as to Furnace, &c., not consuming its Smoke
 „ *i* ditto as to Black Smoke from Chimney
 94 *a* Notice requiring abatement of Nuisance, general form.
 „ *b* ditto in books of 100, with counterpart
 „ *c* ditto as to Unhealthy Premises
 „ *d* ditto as to Foul Ditch, Drain, Privy, Ashpit, &c.
 „ *e* ditto as to Animal kept so as to be a Nuisance
 „ *f* ditto as to Accumulation or Deposit
 „ *g* ditto as to Overcrowded House
 „ *i* ditto as to Furnace, &c., not consuming its Smoke
 „ *j* ditto as to Black Smoke from Chimney
 95 *a* Complaint of Nuisance to a Justice, general form
 „ *b* Summons on Non-compliance with Notice
 „ *c* ditto where Nuisance is likely to recur
 96 *a* Order of Court of Summary Jurisdiction to Abate Nuisance
 „ *b* ditto prohibiting recurrence of Nuisance
 „ *c* ditto to Abate Nuisance and prohibiting its recurrence
 „ *d* ditto imposing Penalty and directing payment of Costs
 97 *a* Order prohibiting use of House for Human Habitation
 „ *b* ditto declaring House to be Habitable
 98 Complaint, Summons, Conviction, and Order for the Recovery of Expenses, *see Forms under Sec. 257*
 100 *a* Order for Abatement of Nuisance by Local Authority. *Form D in Schedule*
 102 *a* Notice of Intention to make Complaint
 „ *b* Complaint of Refusal of Admission to Premises
 „ *c* Summons
 „ Order, *Form F in Schedule, see Form 305d*
 104 Complaint, Summons, and Order for Recovery of Costs, Expenses, or Penalties, *see Forms under Secs. 251, 257*
 105 *a* Complaint to Justice, by Individual
 „ Summons, *see Forms under Sec. 95*
 „ Order, *see Forms under Sec. 96*
 108 *See Forms under Sec. 93*
 110 *Forms under Secs. 93-109 adapted to Nuisances on Ships or Vessels, to order*

Form A in Schedule

Form B in Schedule

Form C in Schedule

Sanitary Authorities.

II

Section of
Statute

SUBJECT OF FORM.

Offensive Trades :

- | | | | |
|-----|---|---|------------------|
| 112 | a | Complaint of Establishment of Offensive Trade | } Urban
Only. |
| „ | b | Summons | |
| „ | c | Conviction | |
| „ | d | Consent of Urban Authority to Establishment of
Offensive Trade | |
| 114 | a | Certificate of Nuisance from Offensive Trade | |
| „ | b | Complaint | |
| „ | c | Summons | |
| „ | d | Conviction | |
| 115 | | See Forms under Secs. 112, 114 | |

Unsound Food : See also Form 191c

- | | | |
|-----|---|---|
| 117 | a | Complaint or Information as to Unsound Food |
| „ | b | Order to Destroy Unsound Food |
| „ | c | Summons for Exposing such Food for Sale |
| „ | d | Conviction for ditto |
| 119 | a | Complaint as to Unsound Food concealed in House |
| „ | b | Search Warrant for Unsound Food |

Infectious Diseases and Hospitals :

- | | | |
|-----|---|---|
| 120 | a | Medical Certificate as to Infected House |
| „ | b | Notice to Disinfect |
| „ | c | ditto in books with counterpart |
| „ | d | Complaint on Non-compliance with Notice |
| „ | e | Summons |
| „ | f | Conviction |
| „ | | Complaint, Summons, and Order for recovery of Expenses, see
Forms under Sec. 257 |
| 121 | a | Order for Destruction of Infected Articles |
| 124 | a | Medical Certificate for Removal of Infected Person |
| „ | b | Order of Removal of Infected Person |
| 126 | a | Complaint for Exposure of Infected Person |
| „ | b | Summons |
| „ | c | Conviction |
| „ | d | Infectious Disorders—Public Notice |
| 127 | a | Complaint for not Disinfecting Conveyance |
| „ | b | Summons |
| „ | c | Conviction |
| 128 | a | Complaint for letting Infected House |
| „ | b | Summons |
| „ | c | Conviction |

Epidemic Diseases :

- | | | |
|-----|---|--|
| 140 | a | Complaint for disobeying Regulations |
| „ | b | Summons |
| „ | c | Conviction |
| „ | d | Complaint for obstructing execution of Regulations |
| „ | e | Summons |
| „ | f | Conviction |

Section of
Statute.

SUBJECT OF FORM.

Mortuaries :

- 142 a Medical Certificate for Removal of Body
 „ b Order of Justice to remove Body

Highways and Streets :

*See also Forms under Highway Acts, settled by W. Cunningham Glen, Esq.
 and Alex. Glen, Esq.*

- 149 a Consent of Urban Authority to taking up Pavement, &c.
 150 a Notice to Pave, &c., private Street
 „ b ditto in books with counterpart
 „ c Notice to provide means of Lighting
 „ d ditto in books with counterpart, to order
 „ Complaint, Summons, and Order for Recovery of Expenses, *see Forms under Sec. 257*
 „ Order declaring expenses to be Private Improvement Expenses, *see Sec. 213*
 152 a Notice declaring Street to be a Highway
 153 a Notice to alter Pipes, &c.
 158 a Notice of Approval of intended Works
 „ b ditto of Disapproval
 „ Complaint, Summons, Conviction, and Order for recovery of Expenses, *see Forms under Sec. 257*

Form G in
Schedule.

Urban

Only.

Towns Improvement Clauses Act :

- 160 a Notice to Number Houses (10 & 11 Vict. c. 34, s. 65)
 „ b ditto to Remove Projections (Id., s. 69)
 „ c ditto to put up Waterspout (Id., s. 74)
 „ d ditto of Ruinous Buildings (Id., s. 75)
 „ e ditto of Intention to take the site of Buildings (Id., s. 77)
 „ f ditto to Put up Hoard or Fence (Id., s. 80)
 „ g ditto to Remove Hoard or Fence (Id.)

Markets and Slaughter-houses :

- 166 *See Forms required for Meetings of Owners & Rate-payers under Schd. III. p. 86.*
 169 a Application to erect a Slaughter-house
 „ b Application to use existing premises as ditto
 „ c License to erect Slaughter-house
 „ d License to use existing premises
 „ e Register of Slaughter-houses
 170 a Requisition to affix Notice to Slaughter-house

As prescribed
by Model Bye-
Laws of Local
Government
Board, July,
1877.

Section of
Statute

SUBJECT OF FORM.

Towns Police Clauses Act :

- | | | |
|-------|--|--------------------------|
| 171 a | Notice of Sale of Stray Cattle (10 & 11 Vict. c. 89, s. 25) | } Urban
Only. |
| | Complaint, Summons, and Conviction, <i>see Forms under Sec. 251</i> | |
| „ b | Authority to Superintendent Constable to enter Places used for the purposes of Cruelty to Animals (Id., s. 36) | |
| „ c | License for Hackney Carriage (Id., s. 37) | |
| „ d | Requisition for ditto (Id., s. 40) | |
| „ e | Register of Hackney Carriage Licenses (Id., s. 42) | |
| „ f | ditto of Hackney Carriage Drivers' Licenses (Id., s. 46) | |
| „ g | License to Driver of Hackney Carriage (Id.) | |
| 172 a | License to Proprietor, &c., of Horses, Ponies, Mules, and Asses | |
| „ b | Register of such Licenses | |
| „ c | Licenses to Proprietor of Pleasure Boats and Vessels | |
| „ d | Register of such Licenses | |

General Provisions—Contracts :*See also Form 195 b*

- | | | |
|-------|---|--------------------------|
| 173 a | Contract for Works, with Bond | } Rural
Only. |
| „ b | ditto for Goods, with Bond | |
| 174 a | ditto for Works, with Bond | } Urban
Only. |
| „ b | ditto for Works, without Bond (concise form) for amounts under £100 | |
| „ c | ditto for Goods, with Bond | |

Purchase of Lands :

- | | |
|-------|---|
| 176 a | Notice to Owners, &c., of Lands to be taken compulsorily |
| „ b | Answer in blank to be enclosed with Notice |
| „ c | Petition to Local Government Board for Powers to take Lands |
| „ d | Statutory Declaration to accompany Petition |
| „ e | Book of Reference |

Inspector of Nuisances :

- | | | |
|-----|-----|--|
| 189 | } a | Inspector of Nuisances' Report Book and Journal, 2 qrs., half vellum |
| 190 | | „ b | ditto, 1 qr., half basil |
| | „ c | ditto in sheets, for Reports to Sanitary Authority |
| | „ d | Inspector's Pocket Book, with Printed Headings for House to House Visitation |
| | „ e | Strong Leather Wallet to contain the same, with Pocket and Pencil |
| | „ f | Mr. Maile's Form for detailed Survey of Sanitary State and Condition of District |
| | „ g | ditto, in Books of 1 quire |
| | „ h | ditto, „ of 2 quires |

Section of
Statute

SUBJECT OF FORM.

Inspector of Nuisances—continued.

- 190 *i* Register of Complaints made to Inspector
 „ *j* Inspector's Register for Special Premises
 „ *k* Notice to Medical Officer of Health on occurrence of Epidemic
 or Contagious Disease
 „ *l* Inspector's Report of Sanitary Work, &c., completed in the year
See also Forms under Secs. 93, 94 &c.

Medical Officers of Health :

- 191 *a* Medical Officer's Report Book as to Visits, and Proceedings
 thereon
 „ *b* ditto Register of Applications and result of Action thereon
 „ *b** Register of Visits and Index of Notes. By ALFRED ASHBY, M.B.
Sanitary Record.—"Will be a great help to Medical Officers of Health
 and Inspectors of Nuisances."
 „ *c* Direction of Medical Officer of Health as to Seizure, &c., of
 Animals or Food, Diseased or Unsound, *see also Forms under*
Secs. 117, 119
 „ *d* District Registrar's Form for Returns of Deaths to Medical
 Officers of Health. In Books, with counterpart, 20 entries
 on each page
 „ The Patent Leaf-holder Portfolio, to hold these Returns
 „ *e* Medical Officer's Register for Tabulating Returns of Deaths and
 Diseases
 „ *f* Form of Return by Clerk to Guardians of New Cases of Sickness
 „ *g* Notice from Poor Law Medical Officer, on occurrence of con-
 tagious or infectious diseases
 „ *h* Appointment of Medical Officer
 „ *i* Lithographed Plans of Improved Privy and Dustbin, with
 specification

Other Officers :

- 194 *a* Bond for Surveyor
 „ *b* ditto for Inspector of Nuisances
 „ *c* ditto for Clerk
 „ *d* ditto for Treasurer
 „ *e* ditto for Collector

Settled by George Gibson Esq., District Auditor.

- 195 *b* Surveyor's Certificate Book of Amounts due to Contractors for
 Works (50 Forms)
 „ *d2* ditto Requisition Book

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Statute

SUBJECT OF FORM.

Other Officers—continued.

- 195 *e* Half-yearly Return to Local Government Board of Salaries paid to Medical Officers of Health and Inspectors of Nuisances
 „ *f* Treasurer's Receipt and Payment Book
 „ *g* Treasurer's Pass Book
 „ *h* Cheque Book on Treasurer

Conduct of Business :

- 199 *a* Notice of an Ordinary or Adjourned Meeting, for Local Boards and Improvement Commissioners
 „ *b* Notice of an Extraordinary Meeting, for Local Boards and Improvement Commissioners
 206 *a* Annual Report

For Collectors, &c.

(Under the Local Boards Accounts Order, 1880.)

- 210
- a*
- Notice of intention to make General District Rate

N.B.—Prefixed to every General District Rate Book issued by Messrs. Knight & Co. are the Provisions of the Public Health Act with respect to the Making, Assessing, and Collecting of such Rates; together with the Regulations of the Local Government Board applicable thereto.

- 210
- b*
- General District Rate Book (Copyright Form) with the Rate Collection Account as prescribed—Form H.

No. 1. 15 Lines on a Page.							<i>s.</i>	<i>d.</i>
Books for	700 Names	...	...	...	...	...	4	6
„	1400 „	...	...	...	...	...	6	6
„	1750 „	...	...	...	...	...	7	6
„	2100 „	...	...	...	...	...	8	6
„	3000 „	...	...	...	...	...	10	6
No. 2. 27 Lines on a Page.								
Books for	1250 Names	...	...	...	...	...	8	6
„	1750 „	...	...	...	...	...	10	0
„	2500 „	...	...	...	...	...	12	0
„	3000 „	...	...	...	...	...	13	6
„	3750 „	...	...	...	...	...	15	0
„	4250 „	...	...	...	...	...	17	6
No. 3. 36 Lines on a Page.								
Books for	1650 Names	...	...	...	...	...	10	6
„	2500 „	...	...	...	...	...	12	6
„	3400 „	...	...	...	...	...	15	6
„	4250 „	...	...	...	...	...	17	6
„	5000 „	...	...	...	...	...	20	0
„	6000 „	...	...	...	...	...	25	0

For Collectors, &c.—continued.Section of
Statute.

SUBJECT OF FORM.

**The Rate Collection Account (Form H.) in separate
Books in the following sizes:—**

					s.	d.
FOOLSCAP Folio, Books for	700 Names	...	...	...	7	6
"	1400 "	...	...	...	10	6
"	2100 "	...	...	...	13	6
"	3000 "	...	...	...	16	6

*See also 221, 222a***Collecting and Deposit Account—Form I.**

Books of 1 quire, strong limp leather binding	...	...	...	...	5	0
" 2 quires	...	...	...	...	7	0
" 3 quires	...	...	...	...	9	0

210 d General District Rate Receipt Check Book—Form K.

Books of 100 Receipts	...	...	...	...	2	0
" 200 "	...	...	...	...	3	6
" 300 "	...	...	...	...	5	0

" c Demand Notes for General District Rate.

Books of 100 Receipts	...	...	...	...	2	0
" 200 "	...	...	...	...	3	6
" 300 "	...	...	...	...	5	0

**" d* General District Rate Receipt Check Books
with Demand Note attached.**

Books of 100 Receipts	...	...	...	...	3	0
" 200 "	...	...	...	...	4	6
" 300 "	...	...	...	...	6	0

" f Collector's Weekly Statement**" g Unpaid Rates Statement**Forms for Proceedings against Defaulters. *See 256 a b c d**See also 221a, 222a***" h Application to Local Government Board under Municipal
Corporations (Borough Funds) Act, 1872, sec. 4.
*See also Forms under Sch. III., ante. p. 86.*****56 b Water Rate Book (Copyright Form) with the Rate
Collection Account, as prescribed—**

Books for 1250 Names	...	...	...	...	8	6
" 2500 "	...	...	...	...	12	0
" 3750 "	...	...	...	...	15	0

**213 b Private Improvement Rate Book (Copyright Form)
with the Rate Collection Account, as prescribed—**

Books for 1250 Names	...	...	...	...	8	6
" 2500 "	...	...	...	...	12	0
" 3750 "	...	...	...	...	15	0

**213 a Order declaring Expenses to be Private Improvement
Expenses**

*For Collectors, &c.—continued.*Section of
Statute.

SUBJECT OF FORM.

216 a Highway Rate Book (Copyright Form) with the Rate Collection Account, as prescribed—

	s.	d.
Books for 1250 Names	8	6
„ 2500 „	12	0
„ 3750 „	15	0

*See also Form 222b,***Rate Receipt Check Book—Form K.**

Books of 100 Receipts	2	0
„ 200 „	3	6
„ 300 „	5	0

Urban Rates :

- 221 a Notice of Amendment of Rate
 222 a ditto of General District Rate having been made
 „ b ditto of Highway Rate
- } **Urban Only.**
- See also Forms under Sec. 256*

Rural Rates :

- 229 a Notice of Apportionment of Special Expenses
 230 a Precept to Overseers for General Expenses, in books of 50 with counterfoil
 „ b ditto for Special Expenses
 „ d Rate Books, strongly half-bound, for 360, 720, 1,080, or 1,440 names
 „ e Rate Receipt Books (100, 150, 200, or 250 receipts)
 „ f Receipt and Payment Books, half-bound
 „ f* Overseer's Balance Sheets of Receipts and Payments
 „ g Collecting and Deposit Books, in leather, 1 and 2 quires
 „ h Collector's Monthly Statement
 „ i Unpaid Rates Statement
 „ k Demand Notes in Books of 100, 150, 200, and 250
- } **Rural Only.**
- See Forms under Sec. 213*

Borrowing Powers :

- 233 a Application to Local Government Board for Borrowing Powers
 236 a Mortgage of Rates, on parchment. *Form H in Schedule*
 237 a Register of Mortgages and Transfers
 „ b Mortgage Ledger, and Register of Mortgages and Transfers, constructed by W. REES, ESQ., District Auditor
 238 a Transfer of Mortgage. *Form I in Schedule*
 240 a Grant of Rent-charge. *Form K in Schedule*
 Form of Debenture (*Specimen sent on Application*)
 Annual Return as to Sinking Fund (prescribed by Local Government Board), accompanied by Form of Statutory Declaration
 Return as to Instalments (prescribed by Local Government Board) accompanied by Form of Statutory Declaration

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Audit :

- 247
- a*
- Notice of Audit

Legal Proceedings :

- 251 *a* Complaint or Information } *General Forms, see also Special*
 " *b* Summons } *Forms under various Sections*
 " *c* Conviction }
 " *d* Distress Warrant on Conviction for Penalty
 " *e* ditto on Order for Payment of Money
 256 *a* Demand for Payment of Rate. *General Form, see also Form 210c*
 " *b* Complaint of Nonpayment of Rate
 " *c* Summons
 " *d* Order
 " *e* Distress Warrant
 " *f* Receipt Book. (100, 200, or 300 Receipts)
 257 *a* Notice of Apportionment of Expenses
 " *b* ditto in books with counterpart
 " *c* Demand for Payment of Expenses
 ditto in books with counterpart
 " *d* Order declaring Expenses to be payable by Instalments
 " *e* Complaint for Recovery of Expenses
 " *f* Summons
 Distress Warrant, *see 251e*
 " *g* Order for Payment of Expenses
 259 *a* General Authority to Member or Officer to appear in Legal
 Proceedings
 " *b* Special Authority to Member or Officer to appear in Legal
 Proceedings

Petitions to Local Government Board :

- 270 *a* Petition for Incorporation of Adjoining Area with District
 " *b* ditto for Separation of Part from District
 272 *See also Forms under Schedule III, a to g, page 86*
 273 *b* Petition for Exclusion of Part from District
 282 *See Forms 199 a, b*
 303 *a* Petition for Repeal of Local Act, &c.

Entry on Lands, &c. :

- 305 *a* Notice requiring Permission to enter Premises
 " *b* Complaint
 " *c* Summons
 " *d* Order. *Form F in Schedule*
 " *e* Notice of intention to enter Premises
 306 Complaint, Summons, and Conviction, *see Forms under Sec. 251*
 " *a* Complaint of Obstruction by Occupier
 " *b* Summons
 " *c* Order. *Form E in Schedule*
 310 *a* *See Forms under the Burials Acts*
 312 *a* *See Forms under Schedule II, a to i, page 86*

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Artizans' & Labourers' Dwellings Act, 1868 :

- 1 Notice of Time and Place for consideration of Reports. *Sec. 7*
- 2 Order on consideration of Objections to Reports. *Sec. 7*
- 3 Notice to Owner of Deposit of Plan, &c. *Sec. 8a*
- 4 Notice of Time and Place for consideration of objections to Plan. *Sec. 8*
- 5 Order on consideration of objections to Plan, &c. *Sec. 8*
- 6 Notice to Person alleged to be liable for state of Premises. *Sec. 11*
- 7 Notice of Time and Place for hearing Parties alleged to be liable for state of Premises. *Sec. 11*
- 8 Order adjudicating liability for state of Premises. *Sec. 11*
- 9 Notice to Owner to execute Works. *Sec. 18*
- 10 Notice to Tenant of termination of Tenancy. *Sec. 21*

Petroleum Acts, 1871 & 1879 :*Settled by W. C. Glen, Esq.*

- 1 Notice to Vendors and Dealers to be given by Town Council
- 2 ditto, by Local Board
- 3 Application for License
- 4 License to keep Petroleum, &c., to be issued by Town Council
- 5 ditto, by Local Board
- 6 ditto, by Justices in Petty Sessions
- 7 Register of Licenses, books of 1 quire (*new and improved Form*)

Artizans' and Labourers' Dwellings Improvement Act, 1875 :

- 1 Notice to Owners as to taking Premises. *Sec. 6*
- 2 Placard to be affixed to Premises. *Sec. 11*
- 3 Notice of Provisional Award and Meetings. *Schedule, Art. 10*
- 4 Certificate of Compensation. *Schedule, Art. 14, 24*
- 5 Certificate of Compensation under Agreement. *Schedule, Art. 15*
- 6 Certificate of sum to be deposited. *Schedule, Art. 24*
- 7 Notice of Appeal to a Jury. *Schedule, Art. 26*

Public Health (Water) Act, 1878 :

- Notice to Owners as to requirements of Act. Placard in bold type
- 3a Report of Inspector or Medical Officer as to House without Water Supply
 - 3b Notice requiring Owner to provide a supply of Water for an Occupied House (Form A)
 - 3c Second Notice to be served when requirements of First Notice have not been complied with (Form B)
 - 4a Complaint by Rural Authority
 - 4b Summons
 - 4c Order
 - 5a Notice of Apportionment of Expenses
 - 6a Complaint for Occupying House without Certificate
 - 6b Summons
 - 6c Conviction
 - 6d Certificate of Provision of Water Supply

Canal Boats Act, 1877 :

Regulations of the Local Government Board, with List of Authorities, together with the Circular Letter of the Board addressed thereto, dated July 22, 1878. Price 6d. each, 4s. per doz.

- 1a Notice of Provisions of Canal Boats Act (*Placard in clear type*)
- 1b Information for unlawfully using Canal Boat as a Dwelling
- 1c Summons
- 1d Conviction
- 2a Application for Registration of Canal Boat
- 2b Receipts for Registration Fees, in books of 100
- 2c Register of Canal Boats. Form B
- 3a Certificate of Registry. Form C
- 4a Notice of Infectious Disease on Canal Boat
- 4b Medical Certificate as to steps requisite for preventing Infectious Disorder from spreading
- 4c Notice to Disinfect Canal Boat
- 4d Order for Destruction of Infected Articles
- 4e Order for Removal of Infected Person
- 4f Certificate that Canal Boat has been Disinfected
See also Forms under secs. 120-128 of the Public Health Act, 1875
- 5a Certificate of Authorization to enter Canal Boat
- 5b Examining Officer's Report. Form A
- 5c Information for Obstructing Person in performance of Duty
- 5d Summons
- 5e Conviction
- 10a Information for illegally detaining Certificate of Registry
- 10b Summons
- 10c Conviction

Sale of Food and Drugs Act, 1875 :

38 and 39 Vict., c. 63.

Quarterly Report of Public Analyst

Selling article not of the nature, substance and quality demanded
(*sec. 6*)—

1 Information | 2 Summons | 3 Conviction | 4 Distress Warrant

Refusing to sell to Officer for Analysis (*sec. 17*)—

5 Information | 6 Summons | 7 Conviction | 8 Distress Warrant

Selling Compounded article not composed of ingredients demanded
(*sec. 7*)—

9 Summons

Selling Food, etc., from which part has been abstracted, without making disclosure of alteration (*sec. 9*)—

10 Summons

Instructional Circular of the Local Government Board as to the Provisions of the Act

Rivers Pollution Act, 1876 :

- 1 Notice to Occupier or Owner when Stream or Water Course is being polluted.

Forms by the Society of Medical Officers of Health :

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— x —

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JUNE, 1881.



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